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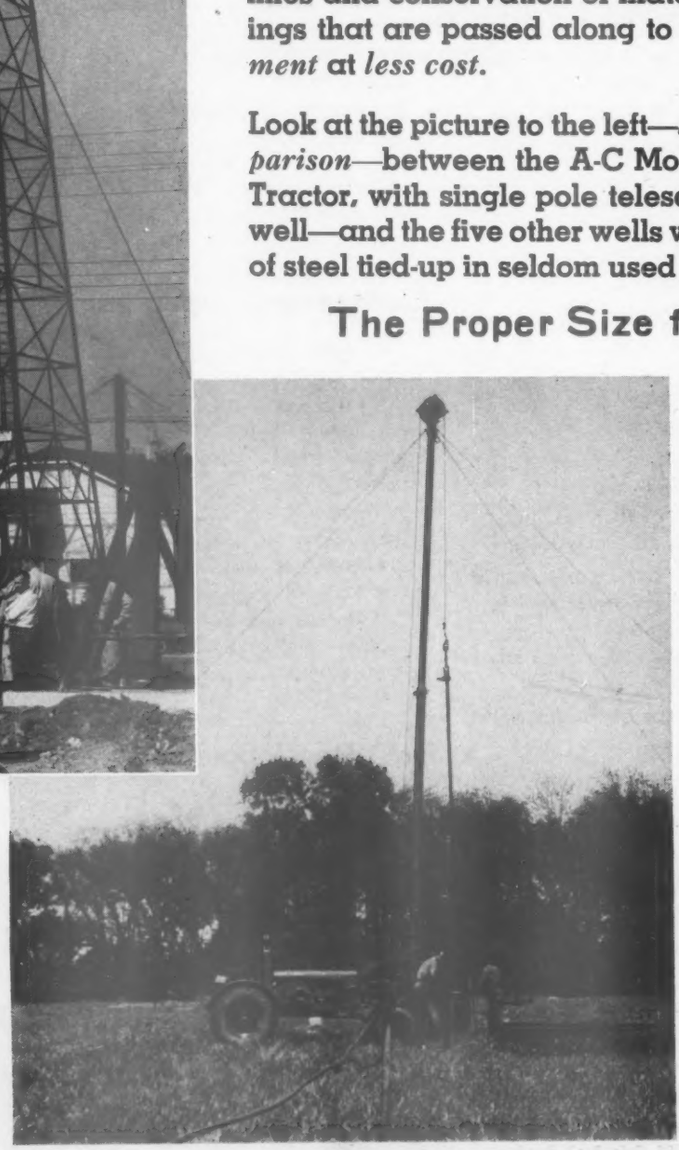
Saving steel is nothing new to us—we have helped the oil industry to conserve it for the past 23 years—the first Cooper designed Well Servicing Unit was built to do away with the bulky, heavy machinery and derricks then in use—*and the present Allis-Chalmers Well Servicing, wheel type, Tractor Units equipped with single or double pole telescoping mast, require the least amount of critical materials.*

Not only does standardized manufacture by Fred E. Cooper and Allis-Chalmers effect production economies and conservation of materials—but it effects savings that are passed along to the user in *better equipment* at *less cost.*

Look at the picture to the left—*and make your own comparison*—between the A-C Model E wheel type Winch Tractor, with single pole telescoping mast, servicing a well—and the five other wells with thousands of pounds of steel tied-up in seldom used derricks.

The Proper Size for ANY Well—



Above: Model E Winch Tractor—Capacity 9,740′ of ½″ line. Maximum Line Pull 58,970 lbs. Winch drum has *eight* line speeds to 1,074 ft. p.m. at 1200 engine r.p.m. Single pole mast.

Right: Model M Winch Tractor—Capacity 8,200′ of ½″ line. Maximum Line Pull 32,600 lbs. Winch drum has *eight* line speeds to 900 ft. p.m. at 1200 engine r.p.m. Single pole mast.

Telescoping Masts are available for Allis-Chalmers Models E, M and W winch units. Telescoping masts are available in Light Weight Lengths 40′ to 50′, Standard or Heavy weights, 45′ to 60′, either Single or Two Pole type. Single Pole capacities from 17,000 lbs. to 96,700 lbs. Two Pole capacities from 37,700 lbs. to 214,880 lbs. Safety Factor figured at 2.

Maximum single line pulls of: Model E Unit 58,970 lbs., Model M Unit 32,600 lbs. Model W Unit 20,666 lbs. The three Models E, M and W are available as double drum units.

We will be glad to recommend the proper size and equipped unit to do your well servicing without derricks.

Trends

Demand for Products Other Than Gasoline Ahead of Last Year

REPORTS of the past week reflect the strong demand position of the petroleum industry in this country. While detailed information covering domestic demands and exports of petroleum products is no longer available it is possible through a study of production data and changes in stocks to approximate the trends in consumption. For the first 5 months of this year, according to government data released this week, the production of motor fuels (not including aviation fuels) was practically the same as the same period last year. The indicated total requirements (domestic plus exports) were about 2 per cent greater this year. In the early months of this year the demand for motor fuels was substantially greater than during the same period in 1941 but due to gasoline and rubber rationing the trend has been downward in recent weeks and the Bureau of Mines estimates that the total demand for gasoline in May was 10 per cent less than in May 1941. Scattered June reports point to a decline of at least 15 per cent compared to the same month last year.

CRUDE PRODUCTION *3,741,570 bbl. daily average—up 68,000 bbl. One year ago 3,682,375 bbl.*

CRUDE STOCKS *251,311,000 bbl. as of July 11—down 1,969,000 bbl. One year ago 255,567,000 bbl.*

GASOLINE STOCKS *84,069,000 bbl. as of July 18—down 1,589,000 bbl. One year ago 86,291,000 bbl.*

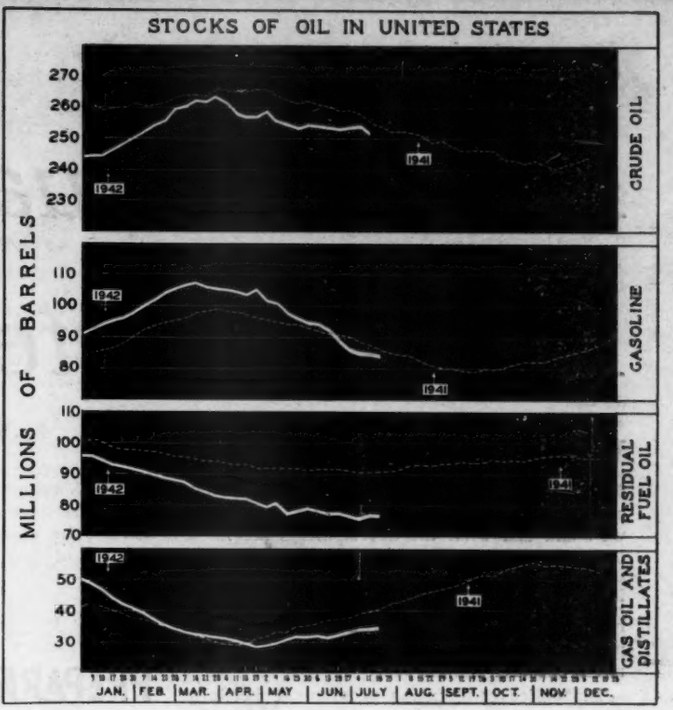
RESIDUAL FUEL-OIL STOCKS *77,230,000 bbl. as of July 18 — down 661,000 bbl. One year ago 91,059,000 bbl.*

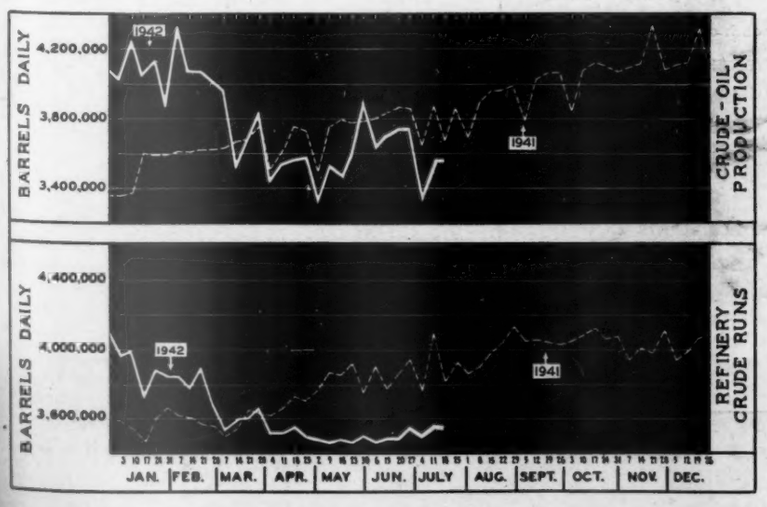
GAS OIL AND DISTILLATES *35,176,000 bbl. as of July 18—up 758,000 bbl. One year ago 40,724,000 bbl.*

REFINERY RUNS *3,582,000 bbl. daily week ended July 18—unchanged. One year ago 4,819,000 bbl.*

The demand for the principal petroleum products other than gasoline continues generally upward. The production of kerosene for the 5 months was slightly under the first 5 months of 1941, with an estimated increase of 5½ per cent in total shipments. A 1½ per cent reduction in the production of products classed as distillate fuel oils developed the first 5 months, despite an indicated increase of 8 per cent in demand. Because of the importance of imports in the total supply, it is difficult to determine accurately what has happened in the demands for residual fuel oils. With the domestic production 7 per cent ahead of last year there has been a steady decline in stocks all year so that present inventories of residual fuels are about 15,000,000 bbl. under a year ago.

Lubricating oils are the only product in which stocks have increased this year and they are also higher than they were a year ago. The gains this year have been brought about through a 15 per cent increase in production in the face of an expansion of approximately 5 per cent in total demand. New supplies of petroleum wax so far this year are about keeping pace with new demands but due to the heavy withdrawals from stocks last year inventories on May 31 were 42 per cent less than on May 31, 1941. Among the other products coke output is running 12.5 per cent behind last year with stocks on May 31 one-half what they were a year earlier. Output of asphalt is practically the same as in 1941 with road-oil production up 45 per cent.





DAILY AVERAGE PRODUCTION FOR WEEK

	July 18 crude oil	July OPC quota all oils	July 11 crude oil
Arkansas	72,250	78,500	70,950
California	701,750	739,500	685,750
Colorado	6,150	7,700	6,400
Eastern fields	95,500	112,500	99,725
Illinois	278,085	304,100	278,450
Indiana	19,100	22,000	18,750
Kansas	286,050	283,200	271,150
Louisiana	317,510	319,600	315,300
North Louisiana	*94,200*		*93,350*
Louisiana Gulf Coast	*223,310*		*221,950*
Michigan	67,950	64,800	67,900
Mississippi	81,500	49,900	83,650
Montana	22,715	23,100	21,310
Nebraska	3,950	4,100	4,000
New Mexico	88,270	89,500	80,860
Oklahoma	374,650	433,000	372,000
Texas	1,232,260	1,214,400	1,203,950
East Texas	*297,695*		*290,100*
West Texas	*211,890*		*207,200*
North Central Texas	*142,455*		*142,800*
East Central Texas	*87,695*		*85,300*
Texas Panhandle	*84,500*		*80,400*
Texas Gulf Coast	*342,305*		*336,700*
Southwest Texas	*65,720*		*61,450*
Wyoming	93,880	96,800	93,425
Total United States	3,741,570	3,842,700	3,673,570
Total production, January 1-July 18, 1942			751,616,350 bbl.
Same period last year			731,532,530 bbl.

Rubber Situation Clarified By Committee Disclosures

By HENRY D. RALPH

WASHINGTON, D. C.—The rubber situation of the United States has become greatly clarified during the past few days and it is now possible to obtain a fairly definite picture of where we stand and what the developments are likely to be during the next year or two.

The government's program calls for construction of plants to produce 800,000 tons of synthetic rubber of various types, whereas our annual peacetime consumption of crude natural rubber never exceeded 600,000 tons.

The entire construction program is scheduled for completion by the fall of 1943, with production increasing gradually in the meantime and reaching the full 800,000-ton rate not later than January 1, 1944.

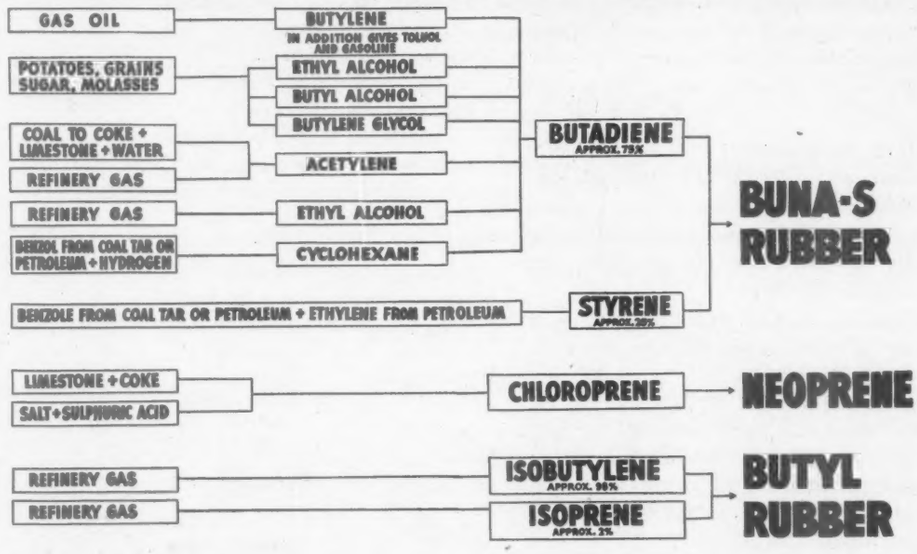
Processes and designs have been revised during recent weeks which will result in savings in cost and materials for plant construction.

The program has been virtually "frozen" as to processes and plant design in order to speed construction. Research is continuing, but if better and cheaper processes are developed it is not likely they will be substituted for plants now under construction, in any large measure, but may be used if the government program is expanded, as is now being considered, to 1,000,000 tons.

The government program is calculated to take care of all military and the most essential needs of this country and allies, with these needs pared to the bone. Even when the synthetic output is supplemented with relatively small amounts of natural rubber from South America and guayule rubber grown here, and the anticipated amount of reclaimed rubber, the program provides no tires for ordinary civilian use.

The oil, rubber and chemical industries in recent weeks have developed projects, entirely outside of the government's program, which give promise of providing inferior but serviceable tires for passenger automobiles in sufficient quantities to keep the civilian economy operating if caution is exercised in tire use. These programs would require few critical materials and little government financing, and they are likely to get government approval.

Simplified Chart Showing PREPARATION OF VULCANIZABLE SYNTHETIC RUBBERS



HERE'S LINEUP ON RUBBER PLANTS

Construction work actually under contract by Rubber Reserve, or covered by definite letters of intent, is shown in the following summary:

BUTADIENE PLANTS

Company—	Scheduled completion date	Annual capacity (tons)
Neches Butane Products	Apr. 1943	50,000
Neches Butane Products	June 1943	50,000
Rubber Synthetics	June 1943	50,000
Rubber Synthetics	Aug. 1943	50,000
Standard of Louisiana	Sept. 1942	6,200
Standard of Louisiana	Mar. 1943	15,000
Sinclair Rubber	Oct. 1943	50,000
Cities Service	Aug. 1943	55,000
Atlas Oil & Refining	Nov. 1942	12,000
Shell Chemical	Mar. 1943	30,000
Southern California Gas	Jan. 1943	25,000
Humble Oil & Refining	Mar. 1943	30,000
Carbide & Carbon Chem.	Sept. 1942	5,000
Carbide & Carbon Chem.*	June 1943	200,000
Koppers United†	Aug. 1943	20,000

*Covers 10 alcohol-butadiene plants, each of 20,000-ton capacity. †Probably charge cyclohexane.

STYRENE PLANTS

Dow Chemical	Jan. 1943	4,200
Dow Chemical	Aug. 1943	12,500
Dow Chemical*	June 1943	100,000
Monsanto Chemical	Mar. 1943	5,000
Monsanto Chemical	Oct. 1942	10,000
Monsanto Chemical	Jan. 1943	10,000
Monsanto Chemical	Feb. 1943	10,000
Carbide & Carbon Chem.	Jan. 1943	12,500
Carbide & Carbon Chem.	Apr. 1943	12,500
Koppers United	Aug. 1943	35,000

*Covers four plants, each of 25,000-ton capacity.

BUTADIENE-STYRENE POLY PLANTS

Firestone (7 plants)	June 1943	165,000
Goodyear (7 plants)	June 1943	170,000
Goodrich (5 plants)	June 1943	115,000
U. S. Rubber (8 plants)	June 1943	165,000
Uncontracted		30,000
Uncontracted		30,000
Uncontracted		25,000

BUTYL-RUBBER PLANTS

Standard of Louisiana	Nov. 1942	7,000
Standard of Louisiana	July 1943	33,000
Humble Oil & Refining	July 1943	20,000

NEOPRENE PLANTS

E. I. duPont	Oct. 1942	10,000
E. I. duPont	Apr. 1943	10,000
E. I. duPont	Oct. 1943	20,000

By no means, however, has all controversy and confusion been eliminated from the rubber situation. There are intraindustry rivalries, interindustry competition, political pressures, and confusing halftruths. The farm bloc in Congress still agitates for greater use of the alcohol process.

For the oil industry, recent developments regarding rubber mean these things:

There should be no need for nation-wide gasoline rationing to save tires if the public cooperates in voluntary programs to conserve the rubber it now has or may get during the emergency.

There should be no need for government requisition of privately owned tires unless, as the president says, the military situation should become much worse.

The oil industry will produce only about two-thirds of the butadiene needed for buna-S rubber. The remainder will come from alcohol. If the program is expanded it probably will all be assigned to the alcohol method.

Operating costs of the alcohol and petroleum methods had little to do with this decision, though after the emergency this probably will be the primary factor in determining which process survives. The present decision was based primarily on considerations of quantities of critical materials required and speed in starting production.

All, or virtually all, the petroleum butadiene will be made from butylene, although the original

intention was to use only butane as the charging stock. This change will save much critical material in plant construction, but has occasioned redesign of plants and caused some delay in starting construction.

The shift to butylene as the charging stock will not hamper the 100-octane aviation gasoline because the Office of Petroleum Coordinator has instituted changes in refinery technique which will make sufficient butylene available for both requirements.

Styrene production processes have undergone a change, with alcohol taking a more prominent place in this program. Most of the styrene required for buna-S rubber will be produced by dehydrogenating ethyl benzene, produced by charging either alcohol and benzene or ethylene and benzene to either catalytic cracking or catalytic polymerization plants.

A "quick" butadiene program has been launched by OPC to pick up substantial quantities of butadiene from the petroleum industry in order to feed the buna-S polymerization plants at a faster rate than had been scheduled pending completion of the big butadiene plants.

Standard Oil Co. of New Jersey has developed a "quick" butyl process which improvises a "bathtub rubber" or "flexon," using isobutylene and dry ice and no critical equipment. At relatively high cost this will produce quickly an inferior grade of butyl rubber outside the government's program which could provide moderately serviceable tires for civilians during the emergency.

The butadiene process of the Standard Oil Co. of New Jersey is being used for most of the new plants in the petroleum program. The alcohol program uses exclusively the process of Carbide & Carbon Chemicals Corp.

The Houdry catalytic cracking process, the Publicker alcohol process, and several other ways of obtaining butadiene are under study.

Donald M. Nelson, chairman of the War Production Board, and Jesse H. Jones, secretary of commerce and head of the Reconstruction Finance Corp. and its various subsidiaries, are the two top officials responsible for policy decisions regarding synthetic rubber. They have now determined that the facts of our present program should be made public, reserving only plant locations, processes which have been placed under an injunction of patent secrecy, and similar information which might be of value to the enemy.

Several Agencies Involved

The Rubber Reserve Corp., an RFC subsidiary, is directly in charge of the program. It has on its staff and on consulting committees experts from several large oil and other companies. It is also assisted by several units in the WPB and other government agencies. Details concerning projects utilizing petroleum products are handled by the Office of Petroleum Coordinator. Plant construction work is in charge of M. J. Madigan, a civil engineer, who is special assistant to the undersecretary of war, detailed to Rubber Reserve for this work.

Contracts or letters of intent have been issued on the 800,000-ton program. Of the 800,000 tons, approximately 100,000 tons will be specialty rubbers—neoprene, butyl, and buna-N or perbunan. The balance, 700,000 long tons in round figures, will be buna-S, the most satisfactory synthetic tire rubber yet found.

To supply raw materials for rubber polymerization plants, the government program calls for construction of plants to produce 678,200 short tons of butadiene per year, and 234,200 short tons of styrene.

Most of the controversy has centered around butadiene. Under the program now determined upon by Rubber Reserve, approximately 200,000 tons of butadiene will be produced from alcohol, 20,000 tons from benzene, and the balance, roughly 480,000 tons, from petroleum products.

When the synthetic-rubber program was launched on a big scale last January, the only tire rubber which had any commercial-service record was buna-S.

To make butadiene via the favored petroleum route it is first necessary to have butylene, a refinery product and a component of 100-octane aviation gasoline. Butylene can be made from butane, obtainable from refinery or natural gases.

The bulk of this butadiene, 300,000 tons, was to be produced in six plants of 50,000 tons each, all charging butane, and all using identical plans based on the so-called Standard Oil process. Using designations employed by Rubber Reserve to avoid disclosure of plant locations, the Neches group has two of these units, the Chicago group has two, and the Houston and Lake Charles groups have one each. In addition the Phillips Petroleum Co. obtained a contract for a 45,000-ton unit charging butane but using a different process, and smaller amounts of butadiene were to be produced by the West Coast group and the Humble and Standard of Louisiana companies.

Butylene Eliminates One Step

These plants charging butane, of which the Neches units are typical, required five stages between petroleum and purified butadiene, and required large amounts of steel, copper, alloys, and other critical materials. Before the engineering on them was entirely completed, the WPB insisted that a resurvey be made to determine if there were not some way of completing the synthetic-rubber program with the use of less critical materials.

In making this resurvey, two things were discovered: first, that the alcohol process requires less critical material and that more alcohol would be available than had been estimated earlier; second, that butylene could be used as the charging stock in the petroleum process without interfering with the aviation-gasoline program. Rubber Reserve therefore allocated more of the program to alcohol and ordered the petroleum plants redesigned to eliminate the phase of making butylene from butane.

The sole purpose of these changes in the program, Rubber Reserve says, was to conserve critical materials in plant construction. It cited figures to show that the process proposed to be used by the Phillips company for a 45,000-ton unit charging butane would have required 23,770 tons of materials in round figures, including 5,300 tons of plate, 14,200 tons of other steel, 1,400 tons of cast iron, 1,635 tons of low alloy, 792 tons of high alloy, 14,450 hp. of compressor capacity. In contrast, the alternate design for a 50,000-ton butadiene plant charging butylene and using the Standard Oil process uses only 11,295 tons of critical materials and 5,250 compressor horsepower.

Phillips Engineering Suspended

Another design requires 11,414 tons of critical materials. The alcohol process uses 9,311 tons of critical materials for a 40,000-ton butadiene unit. Rubber Reserve therefore figures that these butylene and alcohol processes are about on a par from the standpoint of critical materials used in plant construction, which is the most important consideration at present.

When the six plants of the Neches type were ordered redesigned to charge butylene instead of butane, the Phillips company was ordered to suspend further work on its plant and to investigate the possibilities of using the newly developed Houdry butadiene process (see The Oil and Gas Journal, July 16) which converts butane into butene and that into butadiene in a single unit to which is added one of several conventional types of butadiene separation and purification plants, making it a two-stage process. The Houdry company claims that a 50,000-ton butadiene plant using its process will require 12,660 tons of carbon steel, 602 tons of cast iron, 309 tons of high-alloy steel, 482 tons of low-alloy steel, 944 tons of nonferrous metals, and 7,400 hp. of compressors. It declares that this estimate includes office,

NEXT WEEK—

A report on the industry

During the past 6 months the industry, in common with every other major industry, has been bending its every effort toward winning the war. How effective have been these efforts? Next week's Journal, the Semiannual Statistical Number, will provide an inventory. Here are some of the outstanding features:

- **A look ahead, and a glance behind—what has been done and what is projected?**
- **Pipe lines have been in the public attention more, perhaps, than any other single phase. The entire situation will be reviewed, and important changes fully described.**
- **No review would be complete without a searching glance at Washington. This issue will have such a feature, digested for quick reading.**
- **Important engineering developments have taken place, with the necessity to produce more with less. They'll be reported.**
- **These and many other subjects will be covered in this special issue. You'll want to file it for frequent reference.**

laboratory, loading facilities, and all auxiliary equipment, implying that estimates for other processes do not include such items.

The Phillips plant may be redesigned to use the Houdry process and thus charge butane, but Rubber Reserve has ordered the six units of the Neches type redesigned in part to charge butylene. It is claimed that substitution of the Houdry for the Phillips process will save some 10,000 tons of critical materials and $12,000,000 to $14,000,000. If this switch is made this apparently will be the only plant in the program using butane as the charging stock.

Alcohol Had Foothold

Alcohol had a small place in the butadiene program from the start. The Carbide & Carbon Chemicals Corp. has been making ethyl alcohol synthetically from ethylene, a petroleum refinery gas, and had a process for converting alcohol into butadiene. Rubber Reserve therefore gave it a contract to build a 20,000-ton unit, to be completed early in 1943. The charging stock is to be synthetic alcohol, and it requires about 18,000,000 gal. of alcohol per year to produce 20,000 tons of butadiene. Later last spring the alcohol program was expanded and Carbide & Carbon Chemicals was given the contracts for three additional units, making a total of 80,000 tons of butadiene, all to be completed next spring. No provision was made for expanding the production of synthetic alcohol, and practically all the charging stock of the second group of three units will be alcohol distilled from grain.

Within the last month, Rubber Reserve has given Carbide a letter of intent, and a contract is now being drafted, to expand the alcohol butadiene program to 200,000 tons by building additional 20,000-ton units at four locations. All of these plants are scheduled to be in operation in about a year from now, and during 1943 Rubber Reserve expects to obtain delivery of 134,590 tons of buna-S rubber made from alcohol butadiene, and requiring approximately 111,000,000 gal. of alcohol for its production.

The alcohol-butadiene plants are farther along in engineering and construction than the petroleum facilities because the Carbide process was commercially proved and the plant engineering on the first unit was already completed. With 300 engineers working on this first unit it took 3 months before it was far enough along to order the principal equipment. Because all the other units are duplicates of the first, no additional engineering was required for expansion. This fact, plus the savings in critical materials, dictated Rubber Reserve's decision to expand the program via the alcohol route at about the same time the petroleum program was being resurveyed to effect a saving of materials by switching from butylene as a charging stock.

There is much controversy over relative costs of producing butadiene from alcohol and from petroleum. Rubber Reserve's contracts for butadiene from petroleum contemplate an average cost of around 11 cents per pound of butadiene, but most of these contemplated using butane as a charge stock and it has not been estimated what its cost will be from butylene. Charging alcohol at its present ceiling price of 50 cents per gallon, butadiene made from it will cost Rubber Reserve 19 to 20 cents per pound. Carbide & Carbon Chemical Corp. estimates its alcohol cost at 18 to 24 cents per gallon.

Farm interests claim that alcohol can be made much cheaper than at present by developing new fermentation processes and utilizing byproducts. They also say that alcohol can be converted into butadiene much more cheaply than by the Carbide process either by the Polish process now being tested in a pilot plant by the Publicker Commercial Alcohol Co. of Philadelphia, or by a butylene-glycol method being worked out at the Peoria, Ill., experiment station of the Department of Agriculture.

Alcohol has also moved into the styrene program because less critical material is used in this process than in making styrene from ethylene from refinery gas. Rubber Reserve now has in Iowa a plant to dehydrate alcohol for styrene.

Several plans are now being promoted for tiding motorists over until synthetic-rubber production reaches its goal. These plans are the "quick butadiene" program, the "quick butyl" program, the thiokol program, and the plan of the Rubber Manufacturers Association which embodies elements of all the others.

The "quick butyl" program was devised by Standard Oil Co. (New Jersey) as a stop-gap until the regular butyl-rubber plants of the Rubber Reserve program are in operation. Butyl rubber is made from approximately 98 per cent isobutylene and 2 per cent isoprene, combined with an aluminum chloride catalyst at a temperature of around 150° below zero. It has been found that mixing the three ingredients in an open vat with dry ice at a temperature of around 100° below zero produces a type of butyl rubber which Standard has christened "flexon." Much material is lost in the process, so the product is quite expensive, perhaps 50 cents to $1 per pound. Standard is aiming at production of 100,000 tons within 3 or 4 months. A survey of the isobutylene supply is said to have indicated that sufficient can be obtained to make a good start on this program but that isobutylene production would have to be doubled to continue it long at the projected rate.

The Dow Chemical Co. has practically completed a 3,000-ton thiokol plant for Rubber Reserve, and if it proves satisfactory it will be given a contract to construct capacity for 30,000 tons per year.

This week the Rubber Manufacturers Association announced a plan for keeping existing automobiles in service, and has requested approval of the WPB. The plan is somewhat similar to that proposed nearly 2 months ago by the Petroleum Industry War Council. It contemplates maximum speeds of 40 m.p.h. and an average reduction in passenger-car mileage of 40 per cent below the 1941 level, as compared with an estimated 25 per cent reduction in driving at present. The plan assumes continuation of tire rationing, but that vehicles now excluded under the rationing system would be permitted to obtain recaps as long as their tires could be retreaded, and then would be given new tires only on turning in a reclaimable casing.

Tire Program Outlined

If the rubber association can get government approval for its program, it feels confident of providing emergency tires for the 24,500,000 passenger cars it estimates will be in mechanical condition to operate during the next 24 months. Its plan will leave for military and vital civilian needs nearly all the crude natural rubber, 85 per cent of the country's reclaiming capacity, all the buna-S, all the neoprene, and a considerable portion of the regular butyl rubber and planned thiokol production. The annual demand under this program is estimated at 30,000,000 retreads from reclaimed rubber, butyl, or thiokol; 13,200,000 new tires of reclaimed rubber or butyl; and the release of 4,500,000 new tires now frozen in stocks of dealers. This is estimated to require 97,400 long tons of reclaimed rubber, 3,333 long tons of crude rubber, 33,000 tons of thiokol, 32,500 tons of butyl, and assumes that this program would use about 75 per cent of the butyl and thiokol which is expected to be produced. For retreading purposes, it is estimated that reclaimed rubber, thiokol, and butyl could be interchanged in the program on the basis of 100 lb. of thiokol for 80 lb. of reclaim, or 100 lb. of butyl for 140 lb. of reclaim.

Resurvey of Butadiene Plans Fails to Justify Revision

WASHINGTON, D. C. — Production of 32,300 tons of synthetic rubber this year and 338,000 tons in 1943 was disclosed here last week as the result of a resurvey of plant progress made by the War Production Board on instructions from Donald M. Nelson, chairman. Results of the latest study were reported by Mr. Nelson to the Senate subcommittee on agriculture.

The present status of the synthetic-rubber program was summarized by Mr. Nelson in the accompanying table.

The buna-S program, calling for 700,000 tons of synthetic rubber and dividing 200,00 tons to alcohol, 20,000 tons to benzene, and the balance to petroleum products, will be prosecuted on its present basis, Mr. Nelson told the committee. He gave a complete outline of why the WPB had concluded that time and critical materials dictated adherence to the original program.

Mr. Nelson, who later last week took personal charge of the synthetic-rubber program, said that WPB is giving all encouragement possible to technical developments and promised that technical advances would be weighed carefully and fitted, if meritorious, into any expansion of the rubber program. The present 800,000-ton synthetic-rubber program calls for 122,000 tons of steel plate, 210,000 tons of other steel, over 7,000

ESTIMATES OF RUBBER PRODUCTION
(Long tons)

	1942			1943		
	Actual First half	Objective Second half	Total	First half	Second half	Total
Buna-S	1,000	7,000	8,000	54,600	226,400	281,000
Butyl	.....	300	300	1,700	19,300	21,000
Neoprene	3,600	8,400	12,000	9,500	11,500	21,000
Buna-N and Thiokol	4,800	7,200	12,000	7,500	7,500	15,000
Total	9,400	22,900	32,300	73,300	264,700	338,000

tons of copper, bronze and brass, and about 170,000 hp. of compressor capacity.

"Perhaps the most critical shortage which affects the synthetic-rubber program," Mr. Nelson declared, "is air compressors. Even the present synthetic-rubber program will take 37 per cent of the total compressor production for the last quarter of 1942 and 22 per cent of the total production for the first quarter of 1943.

"In June of this year, after a critical appraisal of the many strong competing demands upon the materials at our disposal, we selected the most urgent needs to be filled and arbitrarily scaled down expansion programs to a level of reasonable achievement within the time at our disposal. Although many expansion programs were cut substantially, the synthetic-rubber program has been left unchanged.

"Because of the shortage of many materials, the decisions to be made are not the easy ones of what supplies we shall increase, but of balancing the need for increasing one at the expense of curtailing another.

"In this connection it is apparent to me that a disservice has been rendered the American public in the form of plausible stories of the quick availability of substantial quantities of synthetic rubber. True, we were a nation of abundant resources and it became our habit of mind to think that we needed only the process to get the end product, and that any amount and quality of material would be readily available to produce the result. But today materials are definitely the limiting factor of our productive effort. It is not the simple possession of a formula or a process which guarantees us availability of synthetic rubber or other critical items.

Production Problems Ramified

"My impression from having reviewed many public statements made regarding the present rubber situation, in Congress, in public print, and over the radio, may be summed up in the expression that since we know how to make synthetic rubber we should therefore have abundant supplies immediately. It is said that since we can make rubber from alcohol therefore we should produce a million and a half tons of rubber. It is said that since a small amount of crude rubber can be used for recapping tires, therefore we should keep 30,000,000 automobiles going. I know you gentlemen of the committee are better informed. But this basic misconception has been extensively circulated, and since this committee has given conspicuous attention to the synthetic-rubber program and has had deep influence upon the course of public thought, I appeal to you to work with me to clarify the basic issues that are involved.

"You have indicated that you would welcome an expression of my views regarding S. 2600, the bill to create an independent Rubber Supply Agency with power to divert critical materials to the construction of facilities for the production of additional synthetic rubber from alcohol as the base material in an amount sufficient to fulfill all military and civilian needs.

"Such enormous quantities of war materials are required in the war program that we are in grave danger of running short of material. The key to production at this stage of the program, in my judgment, is the centralized control of the flow of materials. It is my conviction that any dispersion of that power between separate agencies would tend to obstruct the progress of the war effort.

"That bill further would impose a legislative obligation to supply rubber for nonessential civilian needs. We cannot afford to do that at this time. The production must be carefully adjusted

This Week...

PRODUCTION.—Eighty per cent increase in development of California's heavy-oil fields recommended by District 5 OPC report, to avert threatened shortage of residual fuel needed by Navy, lend-lease nations, other war operations. Pacific Coast producers argue for higher prices, contend this step only effective way of stimulating workover jobs, resuming operation of wells on economic border line. . . . Robert E. Allen and E. DeGolyer, assistant deputy coordinators, forecast probable increase in crude demand, for prosecution of war, call attention to United States position as chief supplier of United Nations. . . . OPC promises resurvey of Illinois fields for purpose of determining whether more exceptions to M-68 are justified. . . . East Texas purchasers nominated 1,472,000 bbl. of crude daily in August. Railroad Commissioner Jerry Sadler anticipates OPC certification of about 1,390,000. . . .

TRANSPORTATION.—Contracts awarded in seven sections for constructing 550-mile, 24-in. emergency pipe line, East Texas to Norris City, Ill. First pipe deliveries made July 10, shipments from Lorrain, Ohio, now averaging 40 to 50 cars daily, all to be on hand by November 1. . . . Rail shipments touch new record of 731,760 bbl. daily, in week ended July 11. Possibly includes July 4 accumulation. . . . Mansfield bill passes Senate, authorizing survey of Florida canal, pipe-line route, also pipe-line route from Tinsley, Miss., to Georgia or North Carolina.

A Car-Pooling Club chart devised by Atlantic Refining Co., undergoes scrutiny of Philadelphia, Pa., transportation officials. Company stations have been established as centers at which car-pooling groups can meet. Station attendants assist in organizing groups

No funds provided, practical effect is slight. . . . Tanker deliveries to East Coast of 100,000 bbl. daily, minimum, needed to meet essential demand, PIWC finds, including all emergency river, pipe-line and rail shipments. . . .

REFINING.—War Production Board sticks to guns on assignment of 700,000 tons of buna-S rubber to petroleum industry. Most plans too advanced to justify change, if warranted, Donald Nelson, WPB chairman, declares. . . . Nation-wide study under way, surveying potential recovery of isobutylene at plants of all sizes. Emergency synthetic-rubber production possible, to cushion lag in major plant construction. . . . Production of war materials, at some Gulf Coast plants, hampered by unavailability of proper crude. . . .

PRIORITIES.—Industry awaiting word on disposal of P-98, scheduled to expire July 31. . . . OPC redesignated as petroleum-industry branch, WPB Materials Division, possibly indicates greater delegation of authority over equipment. But not necessarily more stringent control. . . . Critical nature of long list of materials broadcast to industry by WPB. . . . Assistant Deputy Coordinator Allen predicts total of 15,400 wells this year, scaled down from 19,000. Indicates fewer exceptions to M-68, rather than liberalization of spacing restrictions. . . . Nation-wide drive launched July 20 to collect all salvable metal, rubber and other commodities in hands of oil industry, all other branches of American business. Need for steel scrap said particularly acute. Program supported by vast advertising campaign in trade journals, other mediums. . . . Aniline distribution brought under WPB control, by Conservation Order M-184, applicable to deliveries of more than 500 lb. per month. . . . Operators using PRP authorized to request retention of orders on suppliers' books for future delivery, even though in excess of certified quarterly purchase limits. . . .

RATIONING.— Motor-fuel deliveries cut 25 per cent in 162 counties immediately west of eastern seaboard rationing area, creating a buffer zone; will cushion transition from restricted to unregulated area. . . . Agitation for nation-wide rationing temporarily subdued. But, most observers believe, campaign of eastern "have nots" will be resumed, probably intensified, as summer trade diminishes. . . . Restrictions removed on dealer deliveries in rationed zone, entire control rests on exchange of coupons between drivers and retailers, between retailers and tank-wagon operators, between tank-wagon operators and refiners. . . .

RUBBER.—Plan fostered by Rubber Manufacturers Association to provide 24,000,000 cars with necessary recaps. Scheme requires small amounts of new rubber, mostly involves thiokol and butyl synthetic production. Program parallels, in most instances, that advanced by PIWC a month ago. . . . WPB Chairman Nelson discloses 1942 synthetic-rubber production will be 32,300 tons, jump to 338,000 tons in 1943.

to our supply of materials in order to keep the proper balance between military, foreign, and domestic needs. The requirement that critically scarce materials be taken from the production of essential munitions to the production of nonessential civilian goods would hold great danger of impeding the war effort.

"Moreover the bill, by requiring that production of all additional synthetic rubber be from agricultural products as the basic raw materials, would freeze decisions involving complicated technical factors when progress of the art may later be shown to be only in its initial stages. I doubt the wisdom of that course of action."

Farish Explains Two 'Quick' Methods of Producing Rubber

WASHINGTON, D. C. — Two methods of obtaining rubber ahead of the scheduled government program were outlined here July 15 by W. S. Farish, president of the Standard Oil Co. (New Jersey) appearing before the House subcommittee on mines and mining. One of the emergency products is "flexon," a substitute of the butyl type, made from isobutylene. The other is the oil industry's "'quick" butadiene program.

Through flexon and the "quick" butadiene program 200,000 tons more of synthetic rubber may be produced before the end of 1943, said Mr. Farish. This would provide 34,000,000 more automobile tires than were expected, since both of these developments are entirely outside of the Government's 800,000-ton rubber program.

"This is good news," Mr. Farish continued, "but it does not warrant undue optimism on the part of American motorists. There should be conservation of rubber. Driving speeds should be reduced to save wear on tires. Unnecessary driving should be eliminated. We are not yet out of the woods in this business of synthetic rubber, and nothing should be done to waste supplies that may turn out to be crucial."

Synthetic rubber will, on the whole, be better than natural rubber, according to Mr. Farish. "For most uses there is some type of synthetic rubber today as good as natural rubber. In many respects synthetic-rubber tires and tubes are already better than natural rubber. We have ourselves been making comparative tests on buna tires for some time and are consistently getting better service out of them than out of natural-rubber tires under normal road conditions."

Savings in excess of 40 per cent have already been made in the cost of the projected government program, Mr. Farish pointed out. Buna-rubber plants, originally estimated to cost $1,000 a ton of annual capacity, will be built for about $600 a ton. Butyl plants, originally estimated as high as $750 a ton, will be built for about $350 a ton.

Prices of synthetic-rubber tires will be comparable to costs of tires made of natural rubber, he said. "The average price of rubber has been between 15 and 20 cents a pound for several years," he continued. "Buna rubber, which makes up most of the Government's program, will cost to begin with about 30 cents a pound when made from butadiene out of petroleum. When plants are running with maximum efficiency this may be reduced to 20 cents a pound or less. Butyl plants will start out at about 20 cents a pound, and may get down eventually to somewhere between 10 and 15 cents a pound.

"The debatable question is how far the present program of the Government will go toward meeting essential civilian-transportation needs," said Mr. Farish. "It is the element of doubt on this point that troubles everyone most.

"We cannot remove this doubtful question entirely by the simple expedient of building more synthetic-rubber plants. Even if we could get construction material, there is not time to lay down and complete a new synthetic-rubber program of any great size on top of the present one."

The oil industry, according to Mr. Farish, came to the conclusion a few months ago "that a solution had to be, and could be, found, and that the way to do it was by 'make-shift' plants—using spare equipment and odds and ends of junk to patch up temporary facilities."

"There will, of course, be some expense in throwing together this make-shift equipment," he continued. "The operations will be inefficient, and the butadiene will cost more than when made in properly designed plants. But the important thing is that the oil industry is actually going to be able to produce some real amount of butadiene by these methods well in advance of the regular program. And since butadiene is the bottleneck in the production of buna-S rubber, that means just so much additional rubber."

Butyl rubber is being "tackled" in the same way, according to Mr. Farish. Out of that experimentation came "flexon," he said, which, like butyl, is made out of isobutylene, a byproduct gas made in substantial quantities in all refineries. Detailed organization has just been set up to study this program in every single refinery in the United States, large and small, according to Mr. Farish, who added that his company has supplied designs for make-shift equipment for concentrating isobutylene in quantities as small as 10 bbl. a day.

WHERE OUR RUBBER MUST COME FROM—AND WHERE IT WILL GO

1942		1943	
Sources of supply:	Long tons	Sources of supply:	Long tons
Stock pile, Jan. 1, 1942	706,000	Stock pile, Jan. 1, 1943	428,000
New crude, less sinkings	453,000	New crude, less sinkings	61,000
Synthetic production, United States	28,000	Synthetic production, United States	300,000
Synthetic production, Russia	54,000	Synthetic production, Russia	72,000
Total supplies, 1942	1,241,000	Total supplies, 1943	861,000
Requirements:		Requirements:	
U. S. Army and Air Corps	242,000	U. S. Army and Air Corps	356,000
U. S. Navy and Maritime Commission	29,000	U. S. Navy and Maritime Commission	37,000
Lend-lease	82,000	Lend-lease	82,000
Essential civilian	150,000	Essential civilian	120,000
Other countries	310,000	Other countries	271,000
Total requirements, 1942	813,000	Total requirements, 1943	866,000
Carryover at end of 1942	428,000	Deficit at end of 1943	5,000

*Data from current issue of Standard Oil Co. (New Jersey) publication, The Lamp.

The long sheet which this workman is inspecting is synthetic rubber made from petroleum refinery gases at one of the plants of the Standard Oil Co. (New Jersey). It has emerged from a milling operation and has just left a slitting machine which has cut it into long ribbons preparatory to being sliced into sheet sizes suitable for packing and shipping to plants for processing

Aviation Will Have Extensive Influence on Postwar Cars

By J. P. O'DONNELL

NEW YORK. — Regardless of the tremendous impetus which aviation will be given by the vast plane-building program of the United States during the war, the principal market for the oil industry's products after the war will still be the motor car. It would be foolish to assume, however, that the aviation program will not affect the postwar automobile but it is equally ridiculous to conclude that the advances in aviation will be transferred in toto to the engines of motor cars, trucks, etc.

When the aviation program reaches its peak in this country, it is reported that the United States will be building planes at the rate of 125,000 per year. In 1941, before restrictions on automobile production were put into effect, this country's automobile manufacturers produced 4,371,863 passenger cars and trucks. This is a ratio of 35 cars and trucks to one plane. Aviation engines are also being used in tanks so that the engine-to-engine ratio would be somewhat less than 35 to 1, but even with the comparatively slight change it is apparent that, from a numerical standpoint, the finished unit production of automobile companies in normal times dwarfs their wartime output.

Refinements Costly

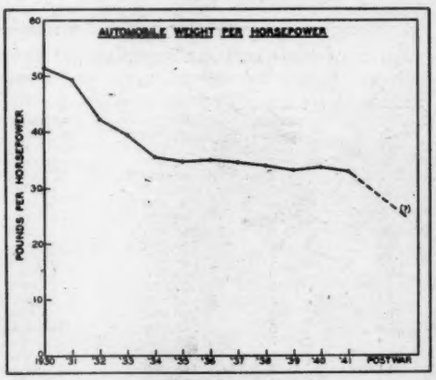
It follows that the refinements which can be built into a comparatively few engines where the cost factor is ignored are unlikely to be applied to 35 times as many when the latter are contesting in a highly competitive market in which cost is, of necessity, a primary consideration. For this reason it seems logical to assume that the major changes in the automobile of the immediate postwar period will be limited to those which can be made on an industrywide basis owing to large volume of supply and without any substantial increase in costs.

Possibly the greatest change in the postwar car will be in its weight made possible by the increased use of aluminum and magnesium. It is estimated that the production of these metals in 1943 will be at an annual rate of 2,500,000,000 lb. In 1939, their combined annual production was less than 350,000,000 lb. Production of aluminum in 1943 is scheduled to exceed 2,000,000,000 lb., more than six times its annual rate in 1939. Magnesium production is expected to reach 400,000,000 lb. in 1943 against 9,000,000 lb. in 1940. In addition to the vastly increased volume of aluminum to become available, its price has been reduced 25 per cent. Since the automobile industry is the largest peacetime consumer of metal, it is certain that it will consume large quantities of the lighter metals that will then be available.

A survey conducted by Frank Jardine, Aluminum Co. of America, and published in the July issue of the S.A.E. Journal, estimates that the postwar "medium-priced car will weigh approximately 2,500 lb." This would be 10 per cent less than average weight of cars built in 1930 when the average was the lowest in the past 12 years. If this prediction is sound and if it can be assumed that the average horsepower of the postwar car will be not less than 100, the ratio of weight to horsepower would be no greater than 25 to 1.

Cars built in 1941 had an average weight of 3,161 lb. and an average of 96 hp., making the average weight to horsepower ratio 33 to 1. In the previously mentioned 1930 cars, weight was 2,780 lb. and the horsepower 54, which gave a ratio of 51.5 to 1. Fig. 1 shows the progress that has been made in recent years in reducing the weight-to-horsepower ratio and also indicates how greatly the increased availability of lightweight metals may accelerate this trend in the future.

Another material which is an important factor in automobile design and which will be available in comparatively large quantities after the war is high-grade gasoline. Several authorities have predicted that the postwar motor fuel will range around 80 octane for regular grade and between 90 and 100, possibly 95, for the premium grade. If these assumptions prove correct, the improvement in automobiles traceable to better fuels will parallel that resulting from the use of lighter metals. Before the aviation-gasoline program made it necessary to reduce the quality of civilian motor fuel, regular grade averaged approximately 74 octane and premium 80. If, for example, regular grade was advanced to 80 it would duplicate the improvement of the previous 3 years in a single step. Regular grade gasoline averaged in the neighborhood of 70 octane in 1938 and 60 in 1931 (Fig. 2).



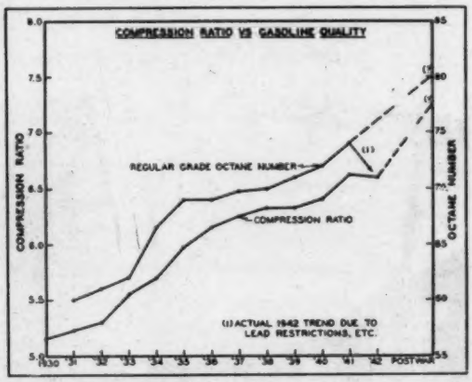


Fig. 1, left, indicates weight per horsepower to continue downward. Fig. 2 shows the probable higher octane trend and increased compression ratios

In order to take full advantage of the better fuel that will then be available, automobile engineers will necessarily increase the efficiency of their engine. This will probably be effected by an increase in the average compression ratio to possibly 7.25 to 1. This would compare with 6.6 for the average 1942 model and with 5.23 for cars built in 1931. It would be possible to attain better efficiency with the use of superchargers but this addition now seems remote because it would result in added costs. A supercharger is not merely an addition to an engine but must be considered in its original design. It is possible that blowers may be used on higher-priced cars.

The postwar car may be expected to provide as many problems as ever to the manufacturer of the highly complex lubricating oil. Temperatures which the oil will be called upon to help dissipate should be higher and clearances which it will be called upon to lubricate should be closer. Such conditions would impose even greater stress on lubricants. It has been predicted that there will be a greater demand for heavy-duty lubricants after the war.

Other Changes Discussed

There are many other angles from which the possible postwar car may be considered. It has been predicted that the engine may be transferred from the front to the rear or that the front wheel drive may be adopted. Such steps are regarded as improbable for the fairly well established reason that they would result in an unfavorably located center of balance particularly when the car is moving uphill. It is probable that the trend toward the automatic transmission and the fluid drive will continue though they will not likely be employed in the light, inexpensive car which might be emphasized after the war. This type may become more common if increased taxes mean much higher prices. Plastic bodies have also been considered but are now regarded as unlikely.

Factors affecting fuel consumption are the principal concern of the oil industry when it returns to its normal function, the production of motor gasoline. Lower weight and higher compression seem to be the most important contributions to greater fuel economy but the automobile engine will still be an extremely inefficient instrument for converting the potential power of gasoline into useful energy. These changes will mean considerably greater mileage per gallon of motor fuel for the postwar car, a factor that may be of great importance to the industry when it gages demand in postwar years.

Experiments were under way before the war broke out with compression ratios of 12 to 1 and higher in supercharged automobile engines using 100-octane testing fuel. This work has been accelerated by knowledge gained from aviation-engine performance.

Sharp Increase Advocated in California Heavy-Oil Fields

By L. P. STOCKMAN

LOS ANGELES, Calif. — An increase of 80 per cent in the development of California fields producing heavy crude (23.9 gravity and under) has been recommended during 1943 in a report on conditions and outlook by the District 5 organization of the Office of Petroleum Coordinator. "All restrictions on development of heavy crude, other than those not warranted through the high-steel factor," declares the report, "should be removed."

Fundamentally, the California situation is this: (1) Heavy-crude-oil prices are too low to permit the expenditure of money necessary to undertake extensive development; (2) the price of fuel oil is too low to sustain the "actual utilization of residual fuel which in the first quarter of 1942 was 45 per cent of the total demand for all California products and by the second quarter of 1943 is expected to be 54 per cent of the total." The recently completed OPC report sustains, in part, the proposed increase in heavy-crude-oil prices in a recommendation that says:

"As the rehabilitation of heavy-crude wells is the quickest means of securing additional heavy-crude-oil production, and as many of the proposed projects require a relatively small amount of steel to secure this additional production, it is recommended that all applications for exceptions to Conservation Order M-68 covering rehabilitation of shutdown or producing wells, be immediately approved provided the steel factor is not less than 1 bbl. daily per ton of steel, or 5 bbl. of 5-year recovery per ton of steel and that M-68 and P-98 be amended or reinterpreted so that those provisions relating to replacement, maintenance and repair be altered so that no application for exception will be required for rehabilitation on existing wells in order to maintain or restore the normal production of such wells, regardless of the bookkeeping methods used in accounting for the cost of such rehabilitation."

The only way that operators of heavy-crude-oil wells, with the exception of the larger companies or operators, can do any extensive rehabilitation work is through increased revenues from current production and the only way that revenue can be increased is through a higher posted price. If gasoline demand drops from 32 per cent in the first quarter of 1942 to 26 per cent of total demand in the first quarter of next year and fuel demand rises from 45 per cent to 54 per cent during the same period it is quite logical to assume that something must be done to offset the loss of 6 per cent in the highest-priced commodity.

The effect of a 25-cent per barrel increase in heavy grades of California crude oil is evident in considering that there are 13,311 wells potentially capable of producing heavy crude. Of this total, 11,651 wells are producing, 861 are shut down and 799 wells are on the idle list. Increased prices would result in clean-out and workover jobs on some of the 11,651 active wells and the 861 wells now shut in would probably be returned to production provided ample equipment is available. A higher price would prove a powerful incentive for every operator to increase production as much as possible.

There is no definite program under way to step up production from old wells in fields producing heavy crude oil notwithstanding the fact that fuel-oil stocks have been reduced more than 25,000,000 bbl. during the past 3 years coincident with a reduction in stocks of heavy crude oil of over 5,000,000 bbl. Present stocks of fuel oil are about 45,000,000 bbl., some of which has been cracked and some suitable for cracking. Stocks of heavy crude oil total 11,000,000 bbl.

Several Exceptions Granted

The OPC has granted several exceptions to operators authorizing drilling on 5 and 10 acres. Exceptions are extended only to operators in fields producing heavy crude. The Wilmington field, Los Angeles Basin, is receiving new work. The OPC survey indicates there is room for 600 new wells in the Wilmington field on the basis of one well to 5 acres. These 600 wells, it is recommended, must be completed in either the tar zone, upper and lower Ranger and upper Terminal zones or may be completed in two or more pays. These multiple completions may produce from three zones simultaneously and it is possible that the so-called tar zone may contribute several flowing wells.

Previous to the recent granting of exceptions to operators in the Wilmington field, drilling operations had been reduced to two rigs and other work consisted of gravel packing and workover jobs. Santa Maria Valley, Midway-Sunset and other San Joaquin Valley fields are also receiving spacing exceptions in conformity with the recommendations contained in the recent OPC report.

"In settled fields," says the report, "because of low reservoir pressures the rate at which the oil reserves can be produced is proportional to the number of producing wells and therefore to increase the availability of the reserves for this war, it will be necessary to provide an increased number of wells. This should be done where it is possible to estimate a high future recovery of oil from a well even at a very low rate in barrels per year. California heavy-oil fields require close spacing in order to produce a high percentage of the recoverable oil in the ground in a reasonable time period."

The Navy recently received bids on about 40,000,000 bbl. of fuel oil for 1943. Practically all California refiners participated in bidding. Navy fuel specifications call for a viscosity of 25 and a pour point of 15 and because of these requirements some refiners are unable to supply more than small quantities. In order to meet requirements, refiners are obliged to blend as high as 35 per cent gas oil or other distillate stock.

COMPOSITE TABLE OF OPC SHOWING PROPOSED CALIFORNIA DRILLING PROGRAM

(Heavy crude oil 23.9° and under)

	Undeveloped pool acres	Average well depth	Proposed: No. new wells	Proposed: Spacing program	Ultimate: Well production	Ultimate: Production per acre
San Joaquin Valley:						
Belridge, North	115	1,300	23	5	50,000	10,000
Belridge, South	1,300	874	279	5	65,000	13,000
Coalinga, East	1,300	2,105	73	5	83,000	16,600
Coalinga, West	2,000	1,583	55	5	60,000	12,000
Edison	390	2,385	39	10	70,000	7,000
Elk Hills	5,030	3,110	30	8	112,000	14,000
Fruitvale	140	3,685	14	10	290,000	29,000
Kern River	350	838	70	5	25,000	5,000
Kern Front	1,500	2,175	244	5	60,000	12,000
Lost Hills	200	1,206	45	5	55,000	11,000
McKittrick	265	1,143	53	5	144,000	28,800
Midway, East	1,200	2,502	62	5	109,000	21,800
Midway, West	800	1,271	150	5	83,000	16,600
Midway, Lakeview	60	2,912	4	5	562,000	112,400
Mount Poso	700	1,738	80	5	168,000	33,600
Poso Creek	500	2,580	31	5	168,000	33,600
Raisin City	200	5,100	10	20	100,000	5,000
Round Mountain	320	1,826	34	5	150,000	30,000
Union Avenue	60	5,000	6	10	150,000	15,000
Coastal district:						
Aliso Canyon	50	5,359	5	10		
Casmalia	300	1,679	30	10		
Cat Canyon	580	6,200	45	10		
Gato Ridge	130	3,174	10	10	(No estimate	
Lompoc	700	2,711	70	10	of reserves	
Orcutt	600	3,175	60	10	made)	
Oxnard	790	3,000	79	10		
Santa Maria Valley	3,000	4,500	300	10		
South Mountain	200	3,361	20	10		
Temescal	240	2,411	24	10		
Los Angeles Basin:						
Brea Olinda	260	2,579	21	5	125,000	25,000
Coyote, East	60	3,343	7	5	90,000	18,000
Huntington Beach:						
Old	70	2,738	9	5	125,000	25,000
New	184	3,200	18	10	135,000	13,500
Montebello	160	3,200	25	5	150,000	30,000
Richfield	105	4,027	9	10	150,000	15,000
Seal Beach	35	5,300	7	5	250,000	50,000
Torrance	340	3,527	34	10	120,000	12,000
Yorba Linda	100	1,812	10	5	110,000	22,000
Wilmington	4,462	3,500	600	5	206,000	41,200
Total San Joaquin Valley	16,430		1,302		2,504,000	
Total Coastal district	6,590		643		No estimate	
Total Los Angeles Basin	5,776		740		1,461,000	
Total state	28,796		2,685			

KEEP THIS OVERSHOT ON YOUR DERRICK FLOOR

BE PREPARED TO . . . *DO YOUR OWN FISHING!*

NEVER before has it been so important to be prepared to DO YOUR OWN FISHING. That's why many operators who, in the past, have hesitated to "tackle" their own fishing jobs, now keep an American Iron Releasing and Circulating Overshot on their derrick floor. These men have learned how easy it is for any driller to work the American Iron Overshot with assured success.

EASY TO ASSEMBLE... EASY TO RUN

Thanks to the research and inventive genius of American Iron and Machine Works Company engineers there is nothing complicated about this all-purpose fishing tool. One glance at the illustration shows how simply it is constructed. The American Iron Overshot is easy to assemble . . . easy to run!

THIS ALL-PURPOSE TOOL SAVES VALUABLE TIME

This Double Bowl American Overshot is designed to fish for two different diameters, such as tool joint and drill pipe, without changing packer rubbers and slips. This means it saves the driller valuable time and may even prevent a more serious fishing job. With a Double Bowl Overshot on the derrick floor you are always ready to fish for either drill pipe or tool joints.

ACCESSORIES AND PARTS AVAILABLE

Because only the highest quality material and the finest workmanship go into every American Overshot you are assured of getting perfect performance, with a minimum of replacements. Parts, slips and all accessories are available at your nearest supply store. Get an American Overshot and be prepared to DO YOUR OWN FISHING!

★ Any single bowl type American Overshot can quickly be converted into a double bowl type by using an extra bowl, slips, packer rubber, sleeve, stop ring, and in a few models, a sub.

Every American Iron and Machine Works Company Shop is Your . . .

Conservation Headquarters

There may be a shortage in the raw materials we need to manufacture new equipment . . . but there's no shortage on the ability of our shops to keep your old equipment running. Our men and our shops are mobilized to help you make every piece of equipment stay in operation as long as possible. For quick, dependable service call your nearest American Iron and Machine Works Company shop.

AMERICAN IRON & MACHINE WORKS CO. • OKLAHOMA CITY U.S.A. •

AMERICAN
IRON & MACHINE WORKS CO.

STATE CAPITALS...

KANSAS

RULES AND REGULATIONS governing the production of oil and gas are eased for the duration of the war emergency in a recent order of the Kansas Corporation Commission. The new rules became effective on July 1.

The emergency rules allow three methods of determining the productivity of the wells for the purpose of allocating production. These include the physical test, the draw-down method and the salt-water cut method. The latter method allows wells in pools affected by water encroachment to obtain a new potential by gaging the amount of water produced by the oil. Formerly it was necessary to run either a draw-down or a physical test.

The water-cut test calls for the producing of three times the fluid in the annular space followed by a 3-hour production test during which the produced fluid is tested hourly for water content. If the variation in the water percentage between any two cuts exceeds 10 per cent, the test is continued for 2 hours more during which the water cuts are taken at 30-minute periods. The average of all samples is taken to determine the water percentage. A well producing 3,000 bbl. of fluid with a 10 per cent salt-water cut receives a 2,700-bbl. productivity assignment.

The other principal change allows the draw-down method of establishing productivity to be used for retests on wells which have the tubing located above the producing horizon. The first test of a well after completion has to be taken with the tubing perforations located at the top of the producing horizon and the same restrictions still apply to wells making in excess of 10 per cent water. Where the tubing perforations are located up the hole, the pressure at the pump intake must be maintained above the saturation pressure (bubble point) of the oil.

This is an important change to Kansas operators as it was formerly necessary to lower tubing to the required point before taking the draw-down test. Numerous Kansas wells are produced with the tubing as much as 1,500 ft. above the producing horizon and the equipping of these wells for testing was often a burdensome item in material and labor.

Another change calls for the taking of the productivity tests on an annual basis. Failure to take the test at 12-month intervals on any well will result in that well being considered as abandoned for the purposes of allocation of oil production. A well tested less than 3 months previous to the taking of a scheduled pool test will not be required to take the test but shall thereafter be scheduled along with the rest of the pool.

ILLINOIS

CLAIM THAT TITLE to gasoline passed at the loading point in Indiana although orders were accepted and deliveries made in Illinois was denied at Springfield, Ill., last week in a case before the Sangamon Circuit Court. The suit was brought by Standard Oil Co. (Indiana) which, it was brought out in the testimony, accepted orders from Illinois accounts at its Chicago headquarters and sent them to Whiting, Ind., for execution. The company contended that there was no sale in Illinois and that such transactions, therefore, were not taxable within the meaning of the law.

The Circuit Court decision is considered of broad significance because the state treasury is holding thousands of dollars in a protest fund under a previous injunction, pending final settlement of the case which is expected to be appealed to the Illinois Supreme Court. There are approximately 75 related cases pending in the same court which issued the decision last week.

The state successfully argued in the Circuit Court that the business of carrying on sale of products within Illinois is the taxable factor.

TEXAS

A NEW FORM has been issued by the Railroad Commission on which companies operating condensate and gas wells producing crude are required to report their withdrawals.

The form requires filing of essential data, showing the location of the well in detail. Production tests must be reported, listing gas withdrawals in thousands of cubic feet; oil or condensate in barrels; the ratio of gas in thousands of cubic feet per barrel of oil or condensate; tubing pressure; casing pressure; color and gravity of liquid; specific gravity of gas and potential data showing open flow in thousands of cubic feet, shut-in pressure and a distillation test.

CRUDE-OIL PURCHASERS this week declared their August requirements would be 1,472,157 bbl. daily, an increase of 27,494 bbl. over the commitments for this month. The Railroad Commission rechecked July nominations by a roll call of the purchasers. Practically all buyers held firm to their previous nominations for July and a few indicated that they needed more crude.

Paul McDermott, Fort Worth, Tex., attorney for Sinclair Prairie Oil Co., requested the commission to increase producing days in the East Texas field to a minimum of 23 per month. He said his company is unable to meet crude requirements under present schedules.

"We need 15,000 bbl. of spot oil daily," he said. "On July 1 we had 495,000 bbl. of crude in storage but by August 1 we will have only 343,000 bbl. We consider the 495,000-bbl. figure as a safe minimum."

Gulf Oil Corp. representatives said their company is drawing on storage at the rate of 10,000 bbl. per day and had purchased 750,000 bbl. of outside crude this month. Elimination of all shutdown days in East Texas was requested.

Sinclair Prairie representatives said they needed 20,000 bbl. more North Texas oil daily than present schedules provided.

CLINTON OWSLEY, on the Railroad Commission's Oil and Gas Division staff for several years, this week was made chief supervisor of the department succeeding Dr. F. V. L. Patten, who resigned to accept a position in the Division of Reserves, Office of Petroleum Coordinator.

TAX LIAISON OFFICER . . .

ARTHUR B. ANDERSON, former director of the Minnesota State Petroleum Division, has been made a special assistant to Joel Dean, chief of the Office of Price Administration fuel-rationing division. He will be a liaison officer between OPA and state gasoline-tax administrators in the rationed area

CALIFORNIA

STEPS ARE BEING TAKEN to partially or completely close a number of California highways especially those passing through oil and gas fields. A number of highways have already been closed in the San Joaquin Valley and use is only permitted on duly approved passes which are, as a rule, issued only to residents in the area. Included in the sections which will be affected by more effective action is a 2½-mile strip of Highway 139 in Kern County which has already been closed to everyone not holding a pass issued daily by the sheriff.

Portions of Avalon and Artesia boulevards passing through the Dominguez field in Los Angeles Basin are being closed and all roads south of Anaheim Boulevard leading into the Wilmington field have been closed to all except employes. It is now necessary to secure birth certificates and passes from the Navy Department to proceed south on Ford Avenue in the harbor area which is the scene of shipbuilding activities. Certain sections at Huntington Beach, Seal Beach and other similar areas are closely patrolled.

In the Santa Fe Springs area special efforts have been made to prevent sabotage and observation towers command both this field and other similar areas.

Practically all roads on privately operated properties in oil and gas fields are closed, some behind gates which are padlocked at all times. A number of air-raid shelters have been constructed for workers in critical fields. One of the best is that constructed by Royalty Service Corp. in the Wilmington field. This shelter, which is equipped with seats, running water and fire-fighting equipment, is an old bunker-fuel tank. The tank plates are ⅝ in. thick and over the shell has been piled 750 sacks of sand.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Political Saboteurs

The entire nation is aroused when saboteurs are landed on our shores by the enemy, equipped to destroy property and to bring confusion to a people engaged in the greatest war effort in their history. Swift justice is demanded for these poltroons who work from within and their trials are now under way.

But what about the opportunists in Washington and elsewhere who do not hesitate to make use of every strategy known to undercover politics in gaining their ends? War-production plans are obstructed and competent officials, coming largely from industry, are threatened because they are more interested in winning the war than they are in the November elections.

The oil business does not have to look to other industries to know what this means.

Operators who go to Washington are unanimous in their praise of those from their own ranks and those specially trained in government service who are working many extra hours daily in solving petroleum's war problems. Instances are cited in which technicians and executives now with the war agencies in cooperation with oil-company representatives, have provided a solution to a particular problem. In many cases this has meant final conferences that extended through the night.

Everything is ready to go and then something happens. The solution passed every test but the political one. There are costly delays—involving unwarranted compromises—while something else that is politically sound, is worked out. The present situation in rubber, starting back more than a year ago, is a tragic reflection of political expediency at work in a national crisis.

The oil business also knows what it means to deal with the political appointee who can deliver votes in his home town but who, in no respect, is qualified to pass on war plans prepared by those who have spent many years as specialists in petroleum operations. Ignorance, with authority to judge the accomplishments of the informed, is where government red tape starts and ends.

Probably the most vicious and obvious application of war politics to oil lies in the efforts to secure favorable action as riders to appropriation bills. In this category came the plan to secure general exceptions to national drilling restrictions in parts of Illinois, after this program had been disapproved by OPC. This attempt to circumvent the oil industry's contribution to the conservation of war materials was tacked on to a bill providing for a Florida pipe line. The petroleum coordinator fortunately exposed this plan in a manner that caused its political sponsors to run to cover.

At this time, another rider to a Florida canal and pipe-line bill provides for a pipe line extending from Mississippi to the Atlantic seaboard. This proposed expenditure of the taxpayers' money is entirely unjustified at this time as are the principal provisions of the bill. The war agencies have full authority and funds to approve any transportation project of merit that will aid in relieving the present shortage.

No one questions the right of any group or section within the oil industry to present its position as the numerous problems of the war are being solved. Once the decisions are made by those authorized to make them there should be no scuttling of the industry and the nation by resorting to tactics which have no proper place in a democratic economy at any time and which in time of national stress are essentially subversive.

These activities have already brought delays of far-reaching importance to the war program. Their continuance will further weaken the confidence of the entire country in the decency and competence of their political leadership.

Scrap-Metal Campaign Is Launched on Wide Scale

WASHINGTON, D. C.—The nation-wide advertising campaign designed to help stimulate the flow of scrap metal into war production, was launched this week by the Conservation Division, War Production Board. The campaign followed

L. T. Kittinger, vice president Shell Oil Co., Inc., has been granted leave to head the Salvage Section of the Materials Division, War Production Board, during collection campaign launched July 20

conferences with members of the American Industries' Salvage Committee, sponsor of the $2,000,000 campaign. The committee, made up of representatives of American industry, was organized by the industries concerned at the suggestion of the Conservation Division. The committee has raised the fund to finance the campaign and is responsible for the selection of the advertising and publicity mediums used.

"This campaign," said L. J. Rosenwald, chief of the Conservation Division, "was undertaken by a group of the nation's leading industries, at the request of the War Production Board, and is closely integrated with the new national salvage program. The committee includes member companies of the American Iron and Steel Institute, which is concerned with assuring a continual flow of scrap metal into its plants, but is also using its ads to stimulate the flow of other needed materials. The immediate response of industry in setting up machinery for the campaign was particularly gratifying, in so far as it helped to clear the tracks for an all-out drive to bring in the scrap."

War production during the critical months ahead will be seriously hampered unless scrap and junk can be kept freely flowing, in increasing quantities, to war plants producing material for our fighting forces. This statement was made by L. J. Rosenwald, chief of the Conservation Division, as he formally inaugurated the new national salvage campaign.

"The facts and figures of the war production situation," he said, "show clearly that the supply of raw materials is now the most important limiting factor on production of planes, tanks, guns and ships. Scrap is a very vital part of the raw material supply. Therefore any diminution in the flow of scrap is an immediate threat to war production.

"And as the war production program steps up with each month seeing greater output, the need for scrap increases in direct ratio to production of war goods.

"The part scrap plays in production is not generally realized by the public. Figures now completed for 1941 reveal the importance of scrap. In the case of steel for example, the production of 82,500,000 net tons of steel ingots required the use of 44,600,000 net tons of scrap. An additional 17,000,000 tons of iron and steel scrap was consumed by iron foundries and blast furnaces in making pig iron and other iron products. Thus a total of approximately 61,000,000 net tons, or about one-half of the raw material required to make iron and steel products in that year, was iron and steel scrap. 27,000,000 tons out of this total was "purchased" scrap produced outside the steel industry itself, and collected from general public sources.

"The following table shows roughly the importance of scrap to the total production of other critical metals and rubber in 1941. The aluminum figure includes scrap recovered within the producing plant; others apply only to outside, or "purchased" scrap. All figures are in short tons.

Material—	Total 1941 new supply	Total scrap in 1941 new supply	Ratio of scrap to total (per cent)
Aluminum	416,000	94,000	23
Antimony	47,300	21,600	46
Copper (refined)	2,117,500	360,000	17
Lead (including antimonial lead)	1,090,019	213,674	20
Nickel	101,850	11,550	11
Tin	178,528	20,160	11
Zinc	823,300	65,400	7
Rubber	1,441,000	*310,000	21

*Reclaimed.

"Since the supply of all these materials is now pressed to the very maximum for war production, it is evident that if scrap were eliminated or diminished in any category, war production would suffer by that much."

The Conservation Division of the WPB will establish supervision over the flow of salvage materials through the scrap and waste material dealers industry.

The announcement was made following an agreement reached between Mr. Rosenwald and Reese Taylor, director of the Iron and Steel Division, War Production Board. Allocation of iron and steel from scrap yards to consuming mills will continue to be handled by the Iron and Steel Division.

Responsibility for supervision of the scrap dealers industry was placed by Mr. Rosenwald in the Conservation Division's Automobile Graveyard Section, headed by Merrill Stubbs. This section will continue to have charge of expediting the scrap of junked automobiles from the nation's 22,000 auto graveyards.

•

PIWC Committee to Report On Cost Analysis in August

WASHINGTON.—The Petroleum Industry War Council has abandoned plans for a summer recess, and will hold a meeting in August, principally to hear a report from a special committee of 12 which is making a study of the numerous costs, operating complications, and dislocations caused the oil industry by the war.

The newly created committee is composed of John D. Gill, Atlantic Refining Co., Philadelphia, Pa., chairman; and the general chairmen of each of the five OPC districts of the United States. They are John A. Brown, president, Socony-Vacuum Oil Co., Inc., New York City; Frank Phillips, chairman of the board, Phillips Petroleum Co., Bartlesville, Okla.; Charles F. Roeser, of Roeser & Pendleton, Fort Worth, Tex.; W. H. Ferguson, executive vice president, Continental Oil Co., Denver, Colo.; and William F. Humphrey, president, Tide Water Associated Oil Co., San Francisco, Calif. In addition, William R. Boyd, Jr., also appointed the following individuals to the committee: W. Alton Jones, president, Cities Service Co., New York City; B. I. Graves, vice president, Tide Water Associated Oil Co., New York City; B. L. Majewski, vice president, Deep Rock Oil Corp., Chicago, Ill.; Frank Buttram, president, Independent Petroleum Association of America, Oklahoma City, Okla.; A. Jacobsen, president, Amerada Petroleum Corp., New York City; and Dan Hovey, president, Gulf Coast Refiners Association, Houston, Tex. The committee held its first meeting in New York City July 20.

In commenting upon the appointment, Chairman Boyd said, "The committee has a broad field of activity. The grim vicissitudes of war have caused an exceptionally large number of dislocations in the petroleum industry. Transportation presents the most difficult problem, and the transition from water-borne to overland shipment has been accompanied by a staggering increase in transportation costs in excess of price ceiling. The change from a gasoline to a fuel oil economy means a sharp loss in gross revenue on every barrel of oil put through a refinery. This change in refinery yield is a baffling problem, as yet unsolved. There are several other problems, such as higher unit costs, which are only partially solved. These and many other abnormalities due to war conditions present a Gordian knot which challenges the committee's efforts."

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Daily Production Quota Raised 195,000 Barrels

WASHINGTON, D. C.—Daily production of 4,038,500 bbl. of crude oil and other liquid hydrocarbons was certified July 21 by the Office of Petroleum Coordinator to the oil states.

Most of the increase of 195,000 bbl. daily over the production rate authorized in August by the OPC was assigned to Texas. Certified quotas to Illinois and Oklahoma were below July, reflecting natural declines in the output because of curtailed drilling.

Illinois Spacing Authority Retained by Coordinator

WASHINGTON, D. C.—Congress has completed action and sent to the White House the Mansfield bill for construction of a pipe line and barge canal across northern Florida, as well as a line from Tinsley, Miss., to Georgia or South Carolina.

In adopting the bill the Senate eliminated an amendment offered by Sen. Scott Lucas of Illinois which would have removed all priority restrictions on drilling oil wells in shallow pools spaced closer than the 40-acre rule of Conservation Order M-68.

Ickes Attacks Lucas Amendment

The Lucas amendment was eliminated after Coordinator Ickes announced that a survey was being made of Illinois drilling to determine if further exemptions should be made in M-68, and after he had denounced the amendment in vigorous statement in which he said:

"Having failed to pull the wool over the eyes of the Office of Petroleum Coordinator, so that they might resume the wasteful exploitation of the Illinois oil fields, a little group of self-servers has now stepped forward in the disguise of pious philanthropists, interested in nothing but solving the East Coast oil shortage.

"By lobbying in Congress and advertising in the newspapers, they are trying to make the public believe that the petroleum coordinator has manufactured an oil famine in the East by throttling the Illinois fields—that, indeed the coordinator's obstructionism as regards Illinois is likely to make us lose the war if we don't watch out.

"Pointing out that all they care about (of course) is a chance to make 'a patriotic contribution to the winning of the war,' they would have it believed that, if Congress will only authorize wide-open drilling in Illinois, all the oil troubles of the East will be wiped out practically overnight—just like that.

"They carefully avoid, of course, any mention of the fact that Illinois oil production was on the downward trend—because of the criminally wasteful practices that had been permitted—long before there was issued, at my recommendation, the order which limits drilling, generally, to one well for each 40 acres.

"They carefully avoid, also, any mention of the fact that exceptions to this order are granted whenever the formation of a field warrants it; that exceptions for 429 such wells have been granted in Illinois, and that most Illinois oil operators are in favor of the present barriers against wide-open drilling.

"The plain and indisputable fact—based upon the most careful studies by qualified experts—is that even wide-open drilling in Illinois would not produce enough additional oil to contribute materially to solving the situation on the East Coast.

"Moreover, this wide-open drilling, proposed by certain self-seeking interests, would jeopardize our chances of continuing to be able to produce oil in Illinois for the duration of the war, and it would take critically scarce materials which are desperately needed in the war."

The bill carries no funds and is simply authority for survey work and submission of estimates of appropriations at a later date. Originally the bill placed this authority with the War Department engineers, which construct all waterway improvements, but a Senate amendment, accepted by the House, placed the pipe-line authority in the hands of the Petroleum Coordinator for War. Coordinator Ickes has already arranged for construction of an 8-in. line across Florida, using second-hand pipe, and he has frequently opposed the Tinsley line as being an inefficient use of steel at this time, so the measure is expected to have little practical result for the present.

The bill met a tie vote in the Senate, which was broken by Vice President Wallace.

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Allen and DeGolyer Hint That Crude Demand May Increase

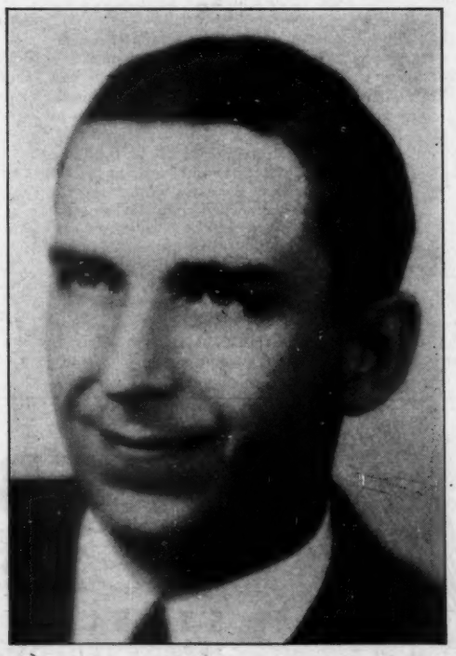
WASHINGTON, D. C.—Indications that large increases in crude production may be required by the war before long were given by officials of the Office of Petroleum Coordinator last week before the Senate committee on public lands.

Robert E. Allen and E. DeGolyer, both assistant deputy coordinators, said that present prices for crude are too low to stimulate much exploration and wildcatting, and that unless new discoveries are made the known reserves may be depleted. Mr. Allen said that shortage of steel is a limiting factor in drilling at present, and that probably only about 15,400 wells would be drilled this year as against an earlier estimate of 19,000.

Mr. Allen also disclosed that it may soon be necessary to ship crude from West Texas and New Mexico fields overland to California to make up for the fact that West Coast production is unable to meet increasing war demands for fuel oil.

Mr. DeGolyer suggested that one solution might be to have the federal Government conduct exploration work or at least pay a part of exploratory expenses. He said that costs of modern geophysical prospecting methods as compared with the chance of discovery and prevailing prices for oil work to discourage independent exploration.

PATTEN TAKES OPC POST . . .



DR. F. V. L. PATTEN, chief oil and gas supervisor for the Texas Railroad Commission during the past 2 years, has been appointed assistant director of the OPC Division of Reserves and will start his new duties about August 1. His first assignment will be in the Houston, Tex., area and, later, he will be moved to Washington, D. C.

Record of 788,550 Bbl. Daily Moved to East Coast by Rail

WASHINGTON, D. C.—A new record movement of 788,550 bbl. of oil each day by rail to the East Coast was reported to the Office of Petroleum Coordinator for the week ended July 11.

This is an increase of 56,790 bbl. daily over the old mark of 731,760 bbl. averaged during the week ended June 20, and is 68,040 bbl. a day more than the volume moved in the week of July 4. Part of the increase may be attributed to the fact that some western refineries did not load cars on July 4—and thus had an extra day's supply available for loading last week.

In shipping 788,550 bbl. daily into the East, 32 companies loaded 26,285 cars. Including cars that were on the way back west for reloading, it is estimated that the East Coast service employed 62,000 cars, taken largely from other sections of the country.

On the basis of an average of 210 bbl. per car, the 26,285 loaded cars carried the equivalent of 5,519,850 bbl. of petroleum and petroleum products during the week.

RFC to Absorb Rail Costs, OPA Rescind Price Advance

WASHINGTON, D. C.—Defense Supplies Corp., an RFC subsidiary, will absorb rail-shipment costs on petroleum to the East Coast, and as a result the OPA is expected to rescind the June 29 advance of 2.5 cents per gallon on gasoline and 2 cents on kerosene and other distillate fuel oils.

Detailed plans for the transportation defrayment have not yet been worked out, and presumably the price increase will remain in effect until the subsidy is begun. Announcement of the subsidy plans caused Senator Russell of Georgia to withdraw an amendment to the pending appropriation bill for OPA and other war agencies which would have prohibited use of funds for enforcement of oil price increases in southeastern states served by pipe lines. This amendment had been adopted by the Senate but was to have been reconsidered later.

Texas Oil Men Celebrate State's 100,000th Producing Oil Well

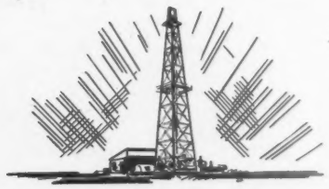
In a fitting celebration for the achievement of a distinguished record, Texas oil men last Thursday gathered at the site of the 100,000th producing oil well in the state, 10 miles southeast of Gainesville, for a typical Texas ceremony. The well, Hollandsworth Drilling Co. 1 Baker, discovery well at Club Lake, was dedicated to the coming victory drive of the United Nations. The ceremony was sponsored by the Greenville Chamber of Commerce as a tribute to the discovery partnership which brought the county its first field. It was conducted from the derrick floor of Hollandsworth 3 J. D. Baker, about 1,000 ft. from the discovery and 100,000th well, since the derrick had been removed from the latter.

"It's up to his skilled hands to get every hour of extra rope service we put in..

Here are some helpful tips you can pass along . . . things that mean even longer life for Roebling "Blue Center" Steel Rotary Drilling Lines . . . steel saved for U. S. at War!

Lesson One:—take a piece of string and pull it gently . . . you'll find it it will stand an unsual strain before breaking. But snap the same string quickly and it's easily broken.

Same thing applies to a wire rope. In any kind of hoisting operation, it's vital that the rope should have no slack at the beginning of the lift—else the load might be applied suddenly and then the stress on the rope will be greatly in excess of that due to the load being handled. So *don't jerk your ropes.*



Lesson Two:—a hammer weighing only a few pounds can produce a blow having the force of a couple of tons. The load on a wire rope is like a hammer—striking a blow on the rope whenever you start the load too quickly.

And it's the same when the rope is going the other way. When even a light load is stopped suddenly while being lowered, the rope is subjected to a much greater strain than the equipment could apply to it in hoisting. So *don't jolt your loads.* Brakes should be applied smoothly and uniformly, and eased off at the slightest sign of "grab." Brake your load over a longer period and your rope will last over a longer period.

In general, shock loads will remove from the rope the very elasticity that is put in to absorb normal impact, while careful handling will preserve the rope's elasticity and keep it in condition to deliver long life.

Of course, the way a machine is run always affects its general maintenance. It's a well-known fact that some people are harder on machinery than others. An operator can push a machine (and a rope) just so far to get extra work out of it—beyond that, the punishment takes its toll of both the machine and the rope—and breakage begins to cost more than the extra work is worth. But in these days when rope steel is vital to the war effort, *wire rope must not be abused.*

Lesson Three:—a pitch-fork was not made to shovel sand. Likewise, "borrowing" ropes is very seldom practical. In these times of priorities and shortages, there is sometimes a temptation to "switch" ropes from one part of a rotary operation to another. "Borrowing" wire rope should be

avoided, as each particular rope is made to do a specific job. Remember that a "borrowed" rope will never give full service when it is used on a job for which it was not intended. In order to obtain maximum service, keep a rope on the job for which it was recommended and put the right new rope on the equipment that needs it.

Roebling "Blue Center" Rotary Drilling Lines are made to deliver a long lifetime of service—they have built a reputation for just that, wherever wire rope has a routine or unusual job to do."

JAR ROEBLING

More ways to help you conserve wire rope coming in this space next month.

JOHN A. ROEBLING'S SONS COMPANY
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Distributed by THE NATIONAL SUPPLY COMPANY

ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Natural Gasoline

OPC Representatives Confer With Operators On Availability of Butane For Butadiene

REPRESENTATIVES of the Office of Petroleum Coordinator, Natural Gas and Natural Gasoline and the Refining divisions continued their conferences this week with manufacturers in the Mid-Continent, Gulf Coast and California, surveying the availability of hydrocarbons for the production of war materials.

Among the points discussed was the availability of butane, which, some technicians claim, is the ideal charging stock for Houdry catalytic butadiene units. Rumors have circulated in Washington that representatives of OPC, WPB, Rubber Reserve Co. and Defense Plant Corp. are considering the advisability of locating one or more Houdry butadiene units in producing districts where the supply of butane is abundant.

Some of the technical details of converting butane into butadiene were discussed with representatives of the natural-gasoline manufacturers but mostly the conferences were concerned with supply, location and availability for diversion into channels not customarily practiced.

E. H. Poe, director of the Natural Gas and Natural Gasoline Division, and Paul Raigorodsky, assistant director; Wright W. Gary, director of the Refining Division; Dustin W. Wilson, assistant director, and K. G. McKenzie, a member of the technical group, Petroleum Industry War Council committee on synthetic rubber, were among the representatives conferring with operators in the Mid-Continent, Southwest and Pacific Coast.

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Larger Volumes of Natural Gasoline Moved in Pipe Lines

Increased volumes of natural gasoline are currently moving from the Mid-Continent through trunk pipe-line systems to Middle West and eastern refining centers. Intensified use of pipe lines in moving natural gasoline to refining centers where it can be recovered as such or continued through the refining process commingled with crude, if blended at the intake points, has been caused by shortage of tank cars.

Threats that the Office of Defense Transportation may rigidly enforce its original prohibition against use of tank cars for hauls of less than 100 miles and the diversion of high-pressure cars to the movement of war materials are factors influencing greater use of pipe lines.

Shipments of natural gasoline through crude lines has been practiced for several years by some of the transportation systems but current conditions have dictated even wider adoption of this method.

In open systems, the volume of natural gasoline injected into crude streams is governed by vapor-pressure limits, probably not exceeding 10 lb. in most instances.

Natural Gas News

Hope Natural Plea for Rate Rehearing Denied

WASHINGTON, D. C.—The Federal Power Commission has rejected a petition by the Hope Natural Gas Co. for rehearing and stay with respect to the commission's opinion No. 76, findings as to the lawfulness of the company's past rates, and its order entered May 26 reducing the company's interstate wholesale rates for natural gas sold to Ohio and Pennsylvania distributors by $3,609,857 annually.

The commission's order reduced Hope's rates for natural gas, effective as to all bills based on meter readings made on or after today (July 15), to the East Ohio Gas Co. (which serves Cleveland, Akron, Youngstown, Massillon, Canton and a number of other Ohio communities) from 36.5 to 29.5 cents per thousand cubic feet; to Peoples Natural Gas Co. (which serves Pittsburgh, Altoona, New Kensington, and other Pennsylvania communities) from 35.5 to 28.5 cents per thousand cubic feet; and to Manufacturers Light & Heat Co. (which serves New Castle, Washington and other Pennsylvania communities), and Fayette County Gas Co. (which serves Uniontown, Connellsville, and a number of smaller Pennsylvania communities) from 31.5 to 28.5 cents per thousand cubic feet. The new rates will reduce natural gas costs to East Ohio by $2,820,000 annually; to the Peoples company by $682,000 annually; to the Manufacturers company by $70,000 annually; and to the Fayette company by $28,000 annually.

The May 26 order also slashed the company's interstate rate base from $66,000,000 to $33,712,526; found 6½ per cent to be the fair rate of return on such rate base; and reduced the company's book reserve for depletion and depreciation from $38,000,000 to $22,000,000.

Southern Counties Man Picked For Association Presidency

NEW YORK.—Arthur F. Bridge, vice president and general manager, Southern Counties Gas Co., Los Angeles, Calif., has been nominated for the presidency of the American Gas Association, it was announced here last week when report of the nominating committee was released.

Nomination of Burt R. Bay, president, Northern Natural Gas Co., Omaha, Neb., as chairman of the natural gas section and R. E. Wertz, Amarillo Gas Co., Amarillo, Tex., as vice chairman, was announced previously at the annual meeting in New Orleans, La.

D. W. Harris, vice president and general manager, Arkansas Louisiana Gas Co., Shreveport, La., and T. J. Strickler, vice president and general manager, Kansas City Gas Co., Kansas City, Mo., are among 11 nominees for 2-year terms on the A.G.A. board.

Charles F. Turner, East Ohio Gas Co., Cleveland, Ohio, has been nominated for the vice chairmanship of the technical section. B. H. Gardner, Columbia Gas & Electric Corp., Columbus, Ohio, is the nominee for chairman of the industrial and commercial-gas section.

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Phillips Technologist Explains Rubber Synthesis

Speaking before a capacity crowd at the Friday noon luncheon of the Tulsa Chamber of Commerce, Arch Foster, technical public relations representative for Phillips Petroleum Co., Bartlesville, Okla., pleaded that the oil industry support any program that will produce synthetic rubber quickly. He described several methods by which substitutes can be made from petroleum, grain alcohol and coal tar but concluded that refinery gases and natural gases offered the largest, long-pull source which can be converted into butadiene and then polymerized with styrene and plasticizers to make a suitable buna-S rubber substitute.

He presented colored wooden models to represent the atomic structure of the more important materials used in the rubber-synthesis discussion. He also presented for display many small articles made from synthetic rubber to show what a wide range of properties are needed in the finished product. He stressed the fact that no single polymerized material has been found which has all the properties of rubber. Following this he said "in order to get the proper diversification it is necessary to prepare an equally wide number of combinations of the chosen chemicals."

From Mr. Foster's discussion it was apparent that much work still remains for the research laboratories of the petroleum, rubber, and chemical companies which are interested in the project and before a perfect line of synthetic products can be offered to the public. "However," he concluded, "that job is not unsurmountable and semi commercial work has already gone far enough to prove the feasibility of making a suitable '10,000-mile' tire for the immediate future and then a superior buna-S or buna-N tire for long wear and skid and oil resistance."

New York Port Official Made Consultant to Fayette B. Dow

WASHINGTON, D. C.—Joseph B. Eastman, defense transportation director, last week announced the appointment of Walter P. Hedden, of New Rochelle, N. Y., as consultant to Fayette B. Dow, director of the Division of Pipe Lines, Tankers, Tank Cars, and Tank Trucks.

Mr. Hedden has been associated with the Port of New York Authority since 1922, serving as research agent, chief analyst, and chief of the Bureau of Commerce. At the time of his appointment, he was director of port development. He has been an instructor in economics at Columbia University since 1927, and is the author of "How Great Cities Are Fed," published in 1930. Acting for the port authority in the interests of the Greater New York community, Mr. Hedden has made special studies of the availability of barges and other water facilities for increasing the delivery of petroleum to the eastern seaboard area.

Functions of OPC Foreign Division Made Explicit

WASHINGTON, D. C.—Functions of the Foreign Division of the Office of Petroleum Coordinator for War have been defined in detail by Deputy Petroleum Coordinator Ralph K. Davies in a memorandum addressed to division directors.

The statement follows:

"It will be the responsibility of the Foreign Division of the Office of Petroleum Coordinator for War to coordinate action on the many complicated and overlapping phases of foreign-petroleum problems in a manner that will assure the availability of the required kinds of products and operating material at the right time and in the right places outside of the United States, in quantities which so far as possible will meet war demands and the foreign petroleum industry's necessities.

"To accomplish this purpose the Foreign Division will continue to be the liaison in all matters of foreign petroleum policy and operation between this office and the various other governmental departments and agencies. The latter include the Department of State, the Board of Economic Warfare, the War Department, the Navy Department, the War Shipping Administration, Office of Coordinator of Information, the British Supply Council, American British Joint Survey Committee, the Netherlands Petroleum Mission, the China Defense Supplies, Inc., the Office of Lend-Lease Administration, the Soviet Government Purchasing Commission, South and Central American agencies, the Allied Armed Forces; and other similar foreign or domestic bodies handling foreign matters. The Foreign Division will, however, have no responsibility for the allocation of 100-octane gasoline, which problem is now handled by a subcommittee of the Munitions Assignment Board.

"The Foreign Division will be the channel through which all communications will be had with the Foreign Operations Committee and its various subcommittees. Furthermore, the Foreign Division shall be the liaison for the Foreign Operations Committee with all divisions of the OPC and other government agencies and departments.

"For the sake of good order, all communications with these agencies and with foreign operating oil companies should either be made through the Foreign Division or be surnamed by a representative of that division.

"The Foreign Division will continue to obtain from and give to the petroleum industry operating outside the continental United States such information and advice as, from time to time, may be necessary to better augment the flow of petroleum to war effort and assure adequate production, refining, transportation and supply of products in foreign territories.

"It will be the duty of the Foreign Division to furnish to properly designated officials of the Army and the Navy of the United States all information in the possession of the division which may be needed and properly requested by the armed forces; it shall continue to be the duty of the Foreign Division to act as the channel through which requests for technical advice and assistance on petroleum matters are received from and forwarded to the various agencies and governmental bodies concerned with petroleum products outside of the United States, and specifically those units mentioned above.

"The Foreign Division will continue to collaborate with various other agencies in the preparation of such material as enemy oil reports, demolition and rehabilitation of foreign facilities, geological and engineering surveys of foreign production areas and potential areas, the construction and maintenance of foreign pipe lines, refineries and proposed projects for development of foreign petroleum economy.

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New Procedure Outlined For Higher Priority Rating

WASHINGTON, D. C.—New procedure for obtaining higher priority ratings for materials required to complete projects already under way was explained last week by Deputy Petroleum Coordinator for War Ralph K. Davies.

Previously, when a contractor could not complete his construction work because certain materials had not been delivered, and delivery was being held up because the original priority rating no longer was high enough, the contractor applied for a higher rating on Form PD-1A.

Now, application for higher priority rating need not be made on Form PD-1A. Correct procedure is to write a letter in quadruplicate in which is listed all material items requiring a change in preference rating status. Thus, requests for changes in ratings can now be made in one application, whereas previously a separate PD-1A form had to be made out for each class of items.

In compiling the list of materials in the single application, under the new procedure, however, applicants are requested to itemize the materials in accordance with the PD-200A materials list.

The letter should also include information showing builder's serial number, item number, unit of measure, quantity, price, and use of item; latest delivery date permissible, and preference rating required by the supplier to meet the delivery date.

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DEATHS

JAMES HULL, 63, driller and production man on oil properties at Oil Springs and Petrolia, Ont., and a veteran of the A.E.F., died at Petrolia last week.

R. J. HOOVER, 66, who drilled one of the first wells in Lincoln County, Oklahoma, and also the pool opener of the Wewoka pool, died at his home in Chandler, Okla., last week. He is survived by his widow.

JAMES CLARENCE SHIELD, 42, oil-field worker in the Bradford field, in Pennsylvania, died suddenly at his home near Bradford last week. His widow and two small daughters survive.

PATRICK J. CLANCY, 66, who had been identified with the oil business in Shreveport, La., for many years, died at his home in Shreveport after an illness of 4 months. Two daughters and a son survive.

CHARLES J. ATKINSON, 74, who was actively engaged in the oil business for the past 40 years, died at Breckenridge, Tex., June 15. Mr. Atkinson was associated in the early days of Ranger and Breckenridge with W. A. Little in the drilling contracting business. In 1924 he formed a producing partnership with J. D. Sandefer in Breckenridge. In his East Texas operations he was associated with Blaine Dunbar, Tyler, Tex.

THOMAS L. MORAN, 73, secretary-treasurer of Caddo Oil Co., died at his home in Tulsa, last Saturday.

P. L. EDDY, 60, oil operator of Kevin, Mont., died last week. He had been ill for more than 3 years. He was formerly production superintendent for Midwest Refining Co. in Elk Basin, later going to Cat Creek in the same capacity.

DAN M. DRUMHELLER, 52, who with his two brothers drilled the discovery well in the Cut Bank oil field in Montana, died last week of a heart ailment while on a fishing trip. Mr. Drumheller had served two terms in the Montana State Senate.

EVERETT L. BRADFORD, 67, field superintendent of Canary Oil Co., died at a hospital in Coffeyville, Kans., last week. Mr. Bradford had been in charge of the oil properties of the Canary company in northern Oklahoma and southern Kansas for 35 years. He is survived by the widow, two daughters and five sons.

BURTON L. BOYE, president of the Asphalt Institute from 1933 to 1938, and formerly in charge of the asphalt department of Standard Oil Co. of New York, died at Summit, N. J., July 9. Mr. Boye had served with Socony for 38 years until his retirement in 1938. At the time of his death he was filling a war-emergency post as acting mayor and president of the common council of Summit.

A. J. MAUDLIN, 59, of Sapulpa, Okla., died early last week in a Tulsa hospital. Mr. Maudlin was formerly attorney for several Tulsa oil companies. He came to Tulsa in 1917, and later moved to Muskogee, Okla., and later to Sapulpa. He was on the legal staffs of Pure Oil Co., Black Gold Oil Co., Gypsy Oil Co. and Reiter-Foster Oil & Gas Co. His widow and three sons survive.

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Buffer Zone Formed Between Rationed Area, Western States

WASHINGTON, D. C.—As a cushion between the eastern seaboard rationed area and unrestricted western states, the War Production Board July 20 created a "buffer zone" of 162 counties along the dividing line. The cut in supply is designed to prevent rationed motorists from crossing the boundary line to get unlimited motor fuel.

In addition, the WPB announced that deliveries to filling stations in seven western New York counties would be cut 33⅓ per cent immediately and that on August 22 these counties would be brought into the ration zone without special concession.

The new "buffer zone" takes in all the other 83 counties of western New York and all of Pennsylvania, Maryland, West Virginia and Virginia where curtailment was in effect during winter months and then lifted, and 76 additional counties in eastern Tennessee, Alabama and western Florida where there has been no previous curtailment.

The service station "curfew"—which forbids stations from remaining open more than 12 hours a day and 72 hours a week—was extended to the buffer zone.

Aniline Distribution Placed Under Restrictions by WPB

WASHINGTON, D. C.—Control of the distribution of aniline, important chemical in the manufacture of explosives, dyes, drugs, synthetic rubber and other chemical products, was taken last week by the War Production Board.

ENGINEERING *and Operating* SECTION

Electrolytic Chlorinators Used On East Texas Disposal Projects

By T. P. SANDERS

The disposal of water in subsurface strata is often hindered by action of sulfate-reducing bacteria which cause the formation of a gelatinous precipitate that will eventually plug the sand face. To keep down the action of these bacteria, chlorine, or one of its compounds, is used. However, chlorine is neither plentiful or cheap at the present time.

Several operators in the East Texas field have recently installed electrolytic chlorinators which manufacture the chlorine from the salt water.

CHLORINE and chlorine compounds, widely used to eliminate sulfate-reducing bacteria and algae at water-disposal projects in the East Texas field have recently become practically unobtainable. As a result, East Texas operators are adopting an electroylitic process for liberating chlorine directly from the salt of the oil-field brine. Five disposal plants, operated by three different major companies, have already installed electrolysis equipment, and all other west-side operators having water-disposal wells are now planning similar installations.

Application of the electrolytic process in water-disposal plants was not originally conceived as a war-emergency measure. It was motivated by the desire to reduce treating costs. Since it is proving that it would have been advantageous even during peacetime economy, it should be considered a new and permanent factor in the field of water disposal.

Sun Oil Co. was first to experiment with electrolytic chlorination, following a suggestion offered by R. W. Irwin, of Salt Water Control, Inc. Working together, the two firms developed a technique and overcame several serious problems that threatened to make the process impractical. Solution of these problems is discussed hereinafter.

Importance of Chlorine

Chlorine, together with its compounds, occupies an essential position in East Texas water-disposal procedure. Brine from the wells carries ferrous iron compounds in solution as well as sulfate-reducing bacteria. If these impurities are not eliminated, a gelatinous precipitate of iron sulfide and organics is formed after exposure to air, and this precipitate soon plugs the sand face in a disposal well. The iron compounds in the water can be changed to ferric precipitates and filtered out, but the bacteria must be rendered inactive by chlorination.

The disposal systems operated by the Sun company have never experienced trouble due to algae in the water, but some East Texas plants have found algae formation a potential source of difficulty. At one plant Sinclair Prairie Oil Co. installed equipment for adding copper sulfate as an algae-destroying measure, but at all other plants chlorine or its compounds perform this task. In a number of cases the sand faces of disposal wells have become clogged due to algae, and in such instances it has been found helpful to treat the well with liquid chlorine.

Customarily, water-disposal plants have been using liquid chlorine, chlorinated lime, or hypochloride for bacteria and algae eliminations. Mechanical mixers or proportioners known as chlorinators are used to mix the additives uniformly into the brine. This portion of the typical water-treating system is now being replaced by the electrolytic chlorinators.

The Reaction

In simple terms, electrolytic chlorination consists in placing a series of carbon electrodes in a trough where the salt water will flow at a fairly uniform rate. With direct current of high amperage and low voltage, the reaction is made to take place, breaking down a small portion of the salt (sodium chloride) in the water. Chlorine is liberated as a gas at the positive pole, while sodium is liberated at the negative pole. However, the sodium combines with water instantaneously during the reaction to form sodium hydroxide. This reaction liberates hydrogen from the water, so a gas can be seen bubbling up from both positive and negative poles.

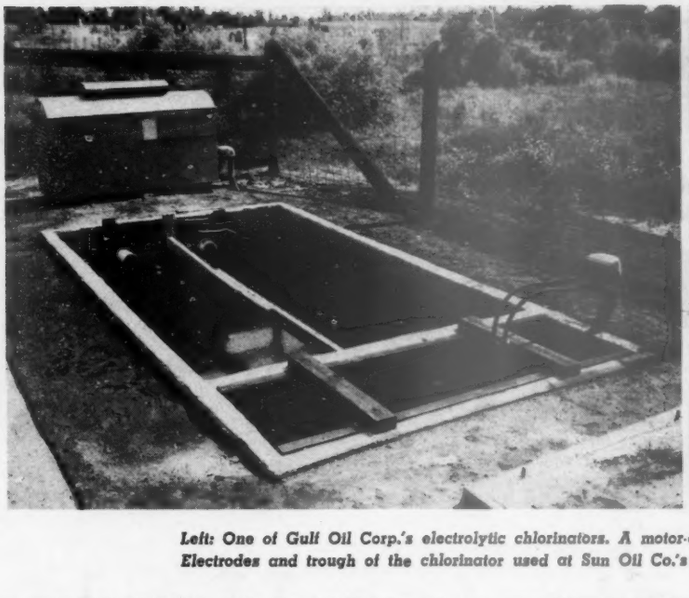
Because of the constant flow of water around the poles, the chlorine is quickly absorbed, and the portion escaping as gas is considered insignificant. Proper treatment calls for generating a slight excess of chlorine. Trouble was expected from the formation of sodium hydroxide in the water, but there has been none. It is believed that this alkali reacts with the magnesium and calcium carbonates present to form sodium carbonate and water, thereby being neutralized immediately.

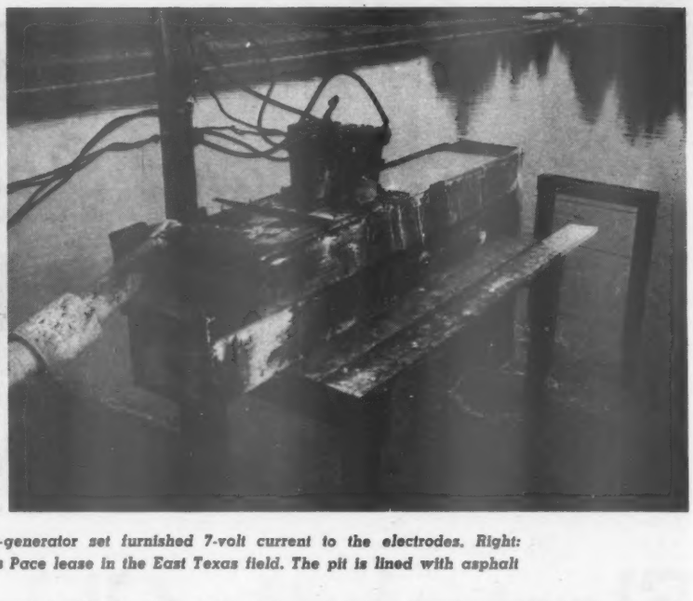
On the first electrolytic installation made by Sun Oil Co. the generating capacity was not large enough. For this reason, chlorine must be added to the water after it passes the electrolytic chlorinator. It is to be expected that in building electrolytic plants many will fail to anticipate future volumes of water to be handled. However, the result is not serious because even a small plant reduces the amount of chemical to be added and there is no waste of the chlorine generated. All plants, save for the first, installed in the East Texas field have been of sufficient capacity for the job intended.

Motors Versus Rectifiers

There are two types of electrical installations which can be used economically for supplying the current to the carbon electrodes. The experimental work was carried out with a motor-generator set, and all subsequent applications have utilized the same type of equipment except for one new plant, where a transformer and rectifier have just been connected up to serve the same purpose as the generator sets.

A motor-generator set at Sun's newest plant





Left: One of Gulf Oil Corp.'s electrolytic chlorinators. A motor-generator set furnished 7-volt current to the electrodes. Right: Electrodes and trough of the chlorinator used at Sun Oil Co.'s Pace lease in the East Texas field. The pit is lined with asphalt

is typical of selections made for chlorination of 4,000 to 5,000 bbl. of salt water per day. A 5-hp., 3-phase, 440-volt a.c. induction motor runs on purchased high-line power at 1,200 r.p.m. driving a 350-amp. 7½-volt generator. The actual delivery from the generator averaged between 275 and 300 amp. at 7 volts.

The only rectifier in use is operating on Shell's King lease west of Kilgore. High-line power is purchased at 440 volts and stepped down to 7½ volts. At this voltage it enters the rectifier where it is changed from a.c. to d.c. current. The rectifier, or copper oxide rectifier, as it can more properly be termed, makes use of laminated plates, consisting of copper, copper oxide, and lead, occurring repeatedly in that order. The copper oxide is the essential substance, for in nontechnical terms, this has the property of permitting the current to progress in only one direction. Alternating current is thus changed to direct current of the same voltage. Efficiency of the rectifier is about 70 per cent.

The rectifier is believed to offer advantages over the motor-generator set that will result in its general acceptance at future plants. Having no moving parts, it is considered more suitable for 24-hour operation. The motor-generator sets in use at the Sun and Gulf water-disposal plants are reconditioned equipment, a selection that was dictated by war-time scarcity of new equipment.

Difficulties

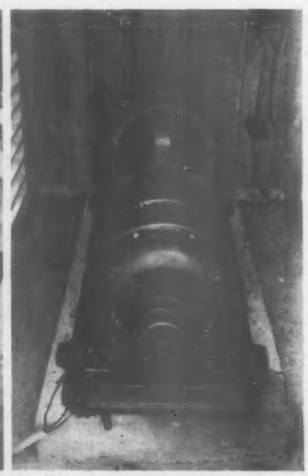
The most unexpected difficulty encountered was the rapidity with which the copper terminals corroded away from the carbon electrodes at the electrolytic plants. Misunderstanding the cause of this trouble, the operators tried various types of grease and other protective coatings on the copper connections. It was assumed that salt water splashing on the copper was the contributing factor. When a representative of the electrode-manufacturing firm was called in, it was found that the basis for the trouble lay in the fact that salt water was drawn up through the porous carbon electrodes by capillary action. Attack upon the copper connections therefore occurred at the point of contact between the two materials. Once the true cause was known, the difficulty was overcome by soaking the tops of the electrodes in molten paraffin to make them impervious to passage of salt water.

Formation of scale on the electrodes was anticipated when the electrolysis method was first devised, but the accumulation proved to be more rapid than had been expected. Oxides of magnesium and calcium build up on the negative pole, and it was found necessary to reverse the direction of current flow at regular intervals in order to remove the scale. On most of the plants the current is reversed every 24 hours.

Extensive experiments were carried out to determine the best spacing for the electrodes in the electrolysis plants. Scale formation makes it impractical to space the electrodes closer than about ½ in. Most operators have spaced the plates ¾ in. to 1 in. apart in order to allow for 2 or more days of scale accumulation in case the current is not switched on schedule. With this spacing 7 to 10 volts is required.

Location of the electrolytic equipment in the water-treating system has been found to be important. In most plants the first step is aeration of the water, accomplished by providing a series of flat concrete slabs for the water to flow over. Here the ferrous iron is changed to ferric precipitates which can be filtered out. Chlorination must take place after aeration to avoid combination of the iron and the chlorine. Also it is preferable to chlorinate the water before it enters the storage pit to guard against growth of algae in the pit.

A weir arrangement has been devised by R. W. Irwin, to be used in conjunction with the electrolytic process. In principle the weir regulates the depth of water about the electrodes to correspond in direct proportion to the rate of flow through the trough. Thus if the rate of water flow through the plant suddenly doubles, the depth of water about the electrodes will be doubled. Since the chlorine generation is proportional to the submergence of the electrodes, this system furnishes an inexpensive manner of regulating chlorine generation to meet the needs.



Left: This rectifier, the only one now in use on a water-disposal project, supplies d.c. power to the electrolytic chlorinator on Shell Oil Co., Inc.'s King lease, west of Kilgore, Tex. Center: Electrodes of the chlorinator at Shell's water-treating plant, showing how the brine is made to flow between them. Right: A reconditioned motor-generator set used at the electrolytic chlorinator at Sun's Pace lease where 4,000 bbl. of salt water per day are treated

Economics

It has been found that where electric power can be purchased for 1½ cents or less per kilowatt hour, as it can in the East Texas field, it is slightly cheaper to employ the electrolytic process than to buy liquid chlorine at peacetime prices.

The question naturally arises as to whether or not chlorine could be produced economically from oil-field brine and marketed in competition with commercial chlorine. The answer appears to be definitely in the negative, for salt water is plentiful in many locations, and most chlorine is now produced by electrolysis in areas where power is cheaper, such as in the Niagara Falls vicinity. Production of certain other elements found in the brine, such as magnesium, seems to offer better possibilities at this time.

Recovery of Gasoline Stored in Laboratory Crude Reservoirs

By HAROLD VANCE
and PASCHAL MARTIN
A. & M. College of Texas

The storage of finished, or near-finished, products of petroleum in natural subsurface reservoirs has intrigued oil technicians for a number of years. At the present time there are several projects under operation, the most recent being the storing of butane in a depleted oil horizon. The authors discuss the result of work done in the laboratory in which gasoline was stored and recovered from a reservoir.

FOR several months the problem of storing excess gasoline has been in the minds of persons interested in the oil industry. This paper deals with the recovery of gasoline injected into artificial crude-oil reservoirs on a laboratory scale. Attempts were made to duplicate as near as possible within the laboratory actual field conditions which would exist around one well in a field under gravity drainage alone.

Equipment

The experimental reservoir consisted of a vessel 2 ft. in diameter and 14 in. in height, with a gas-proof top. Production was secured through a ¼-in. screened pipe, perforated every ½ in., so placed in the center of this reservoir as to allow the entire sand face, which was 12 in. in height, to be exposed to the screened pipe. The equipment as set up represented a well having a drainage radius of 40 ft., a hole diameter of 6 in. and a sand thickness of 39.2 ft. Production was secured through an opening at the bottom of the screened pipe representing a field condition where the working barrel would be located at the bottom of the sand. Fig. 1 shows the equipment used in these experiments.

Procedure

The crude oil used throughout these experiments was from the East Texas field and had a gravity of 35.8° A.P.I. The gasoline used was commercial third grade, having an A.P.I. gravity of 59.2°. The sand was from an outcrop of the Yegua sandstone; it had a sand grain analysis similar to the productive Woodbine sand in the Cayuga field in Anderson County, Texas, but slightly coarser.

In each case the sand was first dried and then dampened with water having the same chemical composition as the Woodbine water produced from the East Texas field. The water-wet sand was sifted into the reservoir, and after the sand had stopped settling the excess crude oil was drained off, leaving the pore spaces saturated with crude oil and water. During the depletion of the sand, natural gas saturated with gasoline filled the top of the reservoir above the sand face, allowing natural gas to enter the pore space as it was depleted of its oil. This gas was then displaced as the pore space was resaturated at a uniform rate with gasoline or a mixture of gasoline and crude oil.

The percentage of crude and gasoline in mixtures was determined by the use of Chart 1. This chart was prepared from data obtained by determining the A.P.I. gravity of mixtures of crude oil and gasoline. Water production in each case was negligible.

Case 1.

The crude-oil reservoir was completely saturated with oil and water. The water saturation was 27.7 per cent and the crude-oil saturation 72.3 per cent. The reservoir was produced until 25 per cent of the crude oil in place had been recovered and the sand brought back up to its original oil saturation of 72.3 per cent by the injection of third-grade gasoline in the well bore. The reservoir was sealed and allowed to stand for 48 hours. The reservoir was then produced to exhaustion. The total crude-oil recovery, including the amount produced to deplete the sand plus that

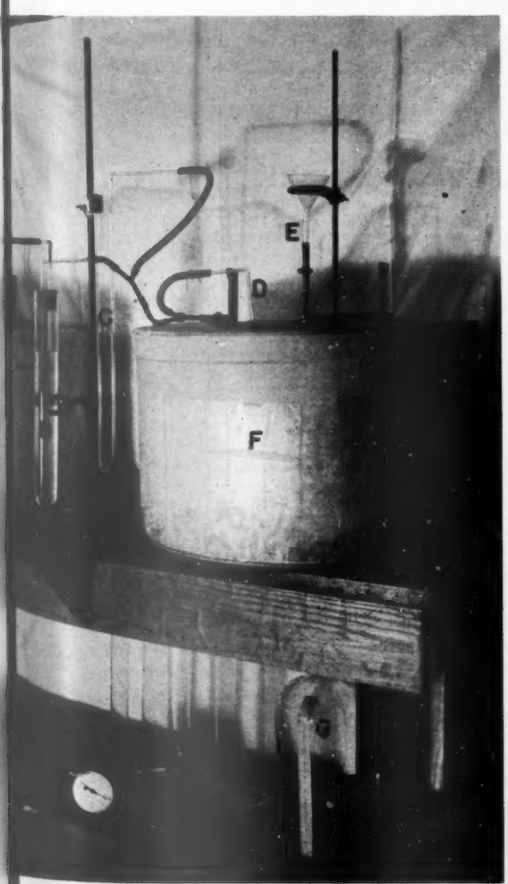
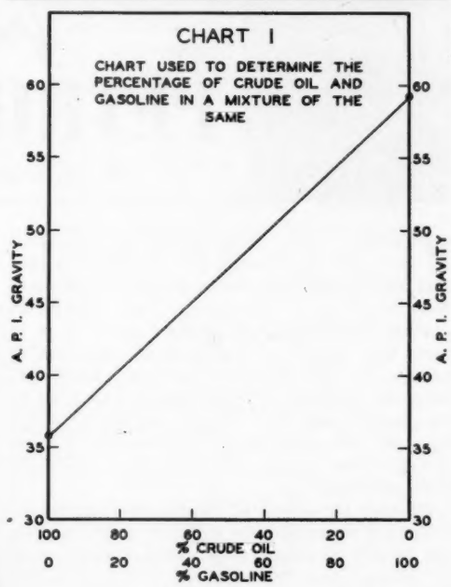


Fig. 1—(Left) Photograph showing equipment used in determining recovery of injected gasoline. (A) Natural-gas supply; (B) pressure regulator using gasoline; (C) manometer; (D) gas inlet to top of reservoir; (E) well; (F) reservoir; (G) receiver for production



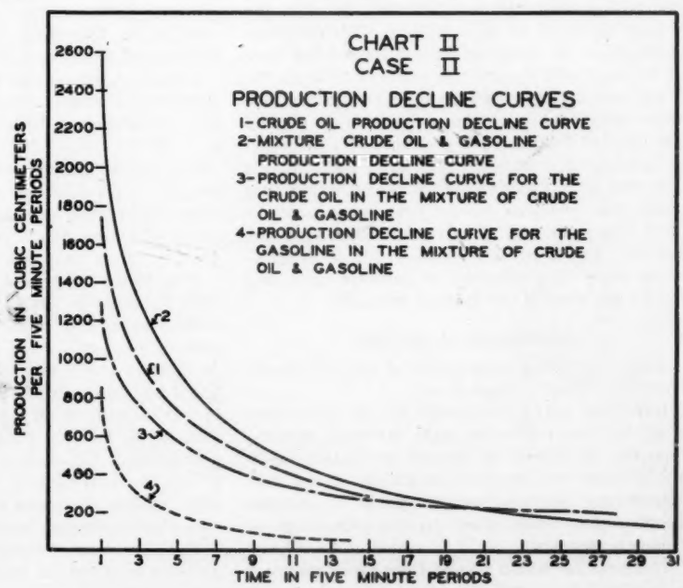


CHART II
CASE II
PRODUCTION DECLINE CURVES
1-CRUDE OIL PRODUCTION DECLINE CURVE
2-MIXTURE CRUDE OIL & GASOLINE PRODUCTION DECLINE CURVE
3-PRODUCTION DECLINE CURVE FOR THE CRUDE OIL IN THE MIXTURE OF CRUDE OIL & GASOLINE
4-PRODUCTION DECLINE CURVE FOR THE GASOLINE IN THE MIXTURE OF CRUDE OIL & GASOLINE
PRODUCTION IN CUBIC CENTIMETERS PER FIVE MINUTE PERIODS
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
TIME IN FIVE MINUTE PERIODS

TABLE 1—COMPARISON OF THE RESULTS OBTAINED IN CASES 1, 2, AND 3

			After gasoline injected			Produced to depletion after injecting gasoline		Total recovery	
	Per cent original crude-oil saturation	Per cent crude-oil recovery by production to depletion	Per cent crude-oil saturation	Per cent gasoline saturation	Per cent total saturation (crude oil and gasoline)	Additional crude oil recovered per cent of original	Per cent injected gasoline recovered	Per cent of crude oil originally in place	Per cent injected gasoline recovered
Case 1	72.3	*25.0	54.2	18.1	72.3	57.7	42.4	82.7	42.4
Produced 25 per cent of the crude oil in place; then injected gasoline over entire sand equal in amount to crude oil produced.									
Case 2	81.4	49.5	41.1	40.3	81.4	31.2	63.5	80.7	63.5
Produced crude oil until sand was depleted; then resaturated sand with gasoline by injecting gasoline over entire face of sand.									
Case 3	77.0	57.9	32.4	44.6	77.0	25.0	70.7	82.9	70.7
Produced crude oil until sand was depleted; then resaturated sand with gasoline by injecting gasoline into bottom one-third of sand face.									

*Not produced to depletion.

flushed out with gasoline, amounted to 82.7 per cent of the crude oil originally in place in the reservoir. The gasoline recovery was 42.4 per cent of the amount injected.

The angle of repose of the oil and gasoline mixture in the sand after depletion was 16°. If the reservoir were 4 ft. in diameter the sand at that distance from the well bore would be saturated through its entire thickness.

Case 2.

The second reservoir was saturated with oil in a manner similar to that used in Case 1. In the second case the water saturation was 18.6 per cent and the oil saturation 81.4 per cent. This reservoir was then entirely depleted of its crude-oil content, with a recovery of 49.5 per cent of the oil originally in place. Gasoline, equal to the amount of crude produced, was then injected into the well bore. The reservoir was then allowed to stand for 48 hours, when production was again continued. The reservoir was then produced to exhaustion. The total crude-oil recovery, including that produced to deplete the sand plus the amount flushed out by the gasoline, amounted to 81 per cent of the crude oil originally in place in the reservoir. The gasoline recovery was 63.8 per cent of the amount injected.

Chart 2 shows the production characteristics of the reservoir for both crude oil and the mixture of crude oil and gasoline.

Case 3.

In this case the crude-oil reservoir was entirely depleted, starting with 77 per cent oil saturation and 23 per cent water saturation, with a recovery of 57.9 per cent of oil originally in place. Then the top two-thirds of the screened pipe was blanked off, and sufficient gasoline to resaturate the entire reservoir was injected through the bottom one-third of the sand face. This condition is the same as blanking off the top of the liner in the well and forcing the gasoline through the lower part of the sand face. This resaturated reservoir now containing the residual crude oil and the injected gasoline was produced to exhaustion by producing from the entire sand face. In this case the total crude-oil recovery, including that which was produced in the first instance to deplete the sand and that flushed out with the gasoline, was 83 per cent of the crude oil originally in place. The recovery of gasoline amounted to 70.7 per cent of the amount injected.

Discussion of Results

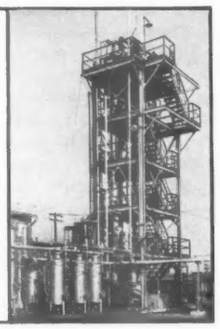
Table 1 shows a comparison of the results obtained in Cases 1, 2 and 3.

It will be noted that about 30 per cent more crude oil was recovered after injecting gasoline than was recovered by normal production methods. Neither the crude-oil saturation at the time of injecting gasoline nor the point of gasoline injection has much effect on the percentage of crude-oil recovery.

The most favorable results from the standpoint of recovery injected gasoline were obtained by injecting the gasoline in the bottom one-third of a sand having low crude-oil saturation. Under these conditions there was an increase in crude-oil recovery of 25 per cent, and 29.3 per cent of the injected gasoline was not recovered.

CHEMICALS *from* PETROLEUM

By W. T. ZIEGENHAIN



PROBABLY no technical subject now commands more attention among the oil fraternity than that which deals with making rubber substitutes from petroleum. It is important, first, because its solution will keep people on the road and this, in turn, will mean the sustained consumption of gasoline and the continuance of a near normal oil business. Secondly, if petroleum is found to be the logical source of the hydrocarbons which make up the rubber-substitute molecule, a large and constant outlet will have been found for more petroleum.

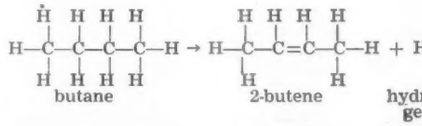
Whether the source of the necessary hydrocarbons will ultimately be refinery gases, natural gas, butane recovered from gasoline plants, alcohol from grain or from the starch of potatoes, all present developments indicate that butadiene will be an important intermediate product. An analysis of its name helps to explain why.

Butadiene, as the name suggests, has the basic chemical structure of normal butane, a four-carbon, straight-chain hydrocarbon. The "diene" portion of the name indicates two places in the chain which are not saturated or where there are deficiencies of hydrogen. Stated in another way, this means there are two hands along the chain of hydrocarbons which are reaching out to grab anything that is also chemically reactive.

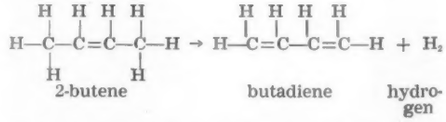
This factor is important because butadiene can then be made to react with or be "polymerized" with a variety of materials to yield rubber substitutes having a wide range of characteristics. And, since chemists agree that no synthetic material will have all the properties of natural rubber, it becomes doubly important in making substitutes to have a suitable base which can be polymerized. For instance, to make tire treads, it will be polymerized with one material, and with another to make the soft inner tube, and still another for the outside of the water hose.

The synthesis of butadiene is simply the progressive removal of hydrogen from the butane molecule. The source of the butane is of no consequence and in certain butadiene polymerization units now under construction, the first dehydrogenation step is to be dispensed with entirely as there has been found a sufficient source of butene by gathering materials from more refineries and thereby making it unnecessary to remove hydrogen from butane to get the required butene.

The complete chemical procedure to be followed in the synthesis of butadiene from butane and through butene



The next step is the further dehydrogenation of the straight-chain butenes by the use of an other catalyst as



This butadiene is a liquid which boils at 24° F. At the temperature of freezing water it has a vapor pressure of 17½ lb. per sq. in. Because butadiene is relatively volatile it must be held under pressure during transportation or storage and because it is rather highly reactive chemically it is preferably polymerized near the point of manufacture. If this is not feasible it can be shipped without fear of polymerization within its own container to form an inferior gum if an inhibitor is mixed with it. However, when this is practiced, it is necessary to remove the inhibitor from the butadiene before the latter can be processed and this represents a disadvantage compared with processing at its origin.

Development, Operation and Valuation of Oil and Gas Properties—Part 9

Recovery From Gas Reservoirs

By PARK J. JONES
Petroleum Engineer, The Texas Company

This is the ninth in a series of articles by the author appearing in The Oil and Gas Journal on Development, Operation, and Valuation of Oil and Gas Properties. Previous subjects discussed were "Effective Porosity, Specific Permeability, and the Geometry of Spacing," issue of May 28; "Flow of Homogeneous Fluids Through Linear Systems," issue of June 4; "Flow of Homogeneous Fluids Through Radial Systems," June 11; "Flow of Homogeneous Fluids: Water in Virgin Oil and Gas Pays," issue of June 18; "Flow of Oil-Water Mixtures Through Media of Uniform Permeability," issue of June 25; "Flow of Gas-Oil Mixtures Through Media of Uniform Permeability," issue of July 2; "Flow of Gas-Oil-Water Mixtures Through Media of Uniform Permeability," issue of July 9; and the first portion on the "Behavior of Natural Gases," issue of July 16. "Behavior of Gas-Oil Mixtures" will be discussed in the issue of July 30.

THIS is a continuation of the discussion on recovery from gas reservoirs begun last week by the author at which time the technique for determining compressibility factors was reviewed. (Editor's note.)

10. *Water encroachment.*—Encroachment of water decreases reservoir space. The fraction of reservoir space V/V_1 which is not invaded by water can be expressed in terms of pressure. For no water encroachment,

$$V/V_1 = (\frac{P}{P})^\circ = 1 \qquad (7)$$

where

V_1 = initial reservoir space, bbl.
V = reservoir space at a given time not invaded by water, bbl.
P_1 = initial reservoir pressure
P = average reservoir pressure at a given time.

The straight line in Fig. 25 designated as Curve 1 corresponds to no water encroachment. The other curves indicate but five of the many possible relationships between reservoir space not invaded by water and reservoir pressure.

Curve 2:

$$\frac{V}{V_1} = 0.3\,\frac{P}{P_1} + 7 \qquad (8)$$

Curve 3:

$$\frac{V}{V_1} = \sqrt{\frac{P}{P_1}} \qquad (9)$$

Curve 4:

$$\frac{V}{V_1} = \frac{P}{P_1} \qquad (10)$$

Curve 5:

$$\frac{V}{V_1} = (\frac{P}{P_1})^2 \qquad (11)$$

Curve 6:

$$V/V_1 = 2.5\,(P/P_1) - 1.5 \qquad (12)$$

11. *Partial water drive but no bypassing.*—If water invades a gas reservoir and does not bypass any gas, the cumulative recovery at a given time is equal to the recovery resulting from a decrease in saturation ΔSV_1 plus the recovery resulting from a decrease in reservoir space $S\Delta V$, that is

$$C = \Delta SV_1 + S\Delta V = S_1V_1 - SV \qquad (13)$$

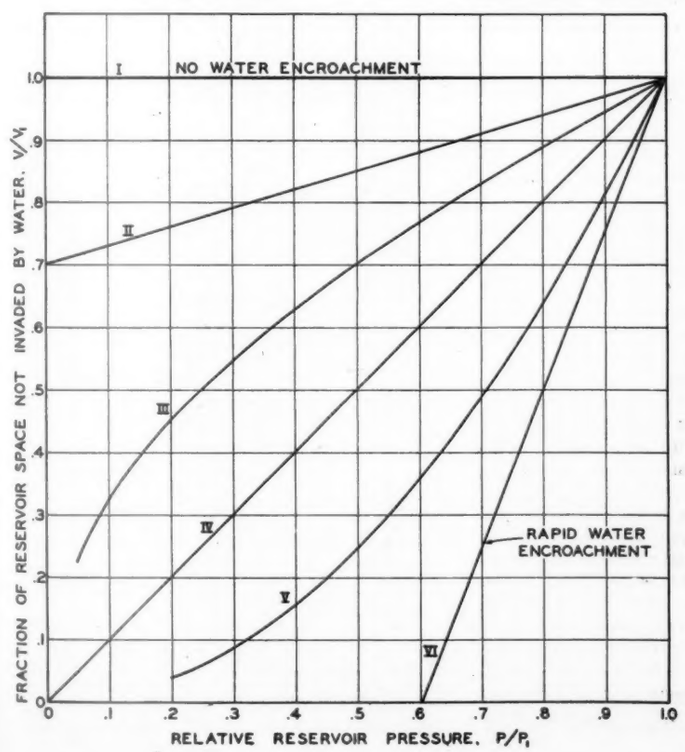
The corresponding fractional recovery is given by

$$F = C/S_1V_1 = 1 - (S/S_1)\ (V/V_1)$$
$$= 1 - (PZ_1/P_1Z)\ (V/V_1) \qquad (14)$$

Curves 2 through 6 in Fig. 24 are illustrative examples of fractional recovery from a particular reservoir for partial water-drive and no bypassing. The effect of a partial water-drive is to yield a higher cumulative recovery for a given decline in reservoir pressure than it is possible to produce in the absence of water encroachment. For example, the recovery at 3,000 p.s.i. for no water encroachment is 20.4 per cent of the gas originally in place, whereas for Curve 6 the corresponding recovery is 70 per cent of the gas originally in place.

12. *Partial water-drive and bypassing*—Encroaching water can bypass gas (1) by not displacing all the gas out of the pores invaded and

Fig. 25 (Below)—Water encroachment vs. pressure



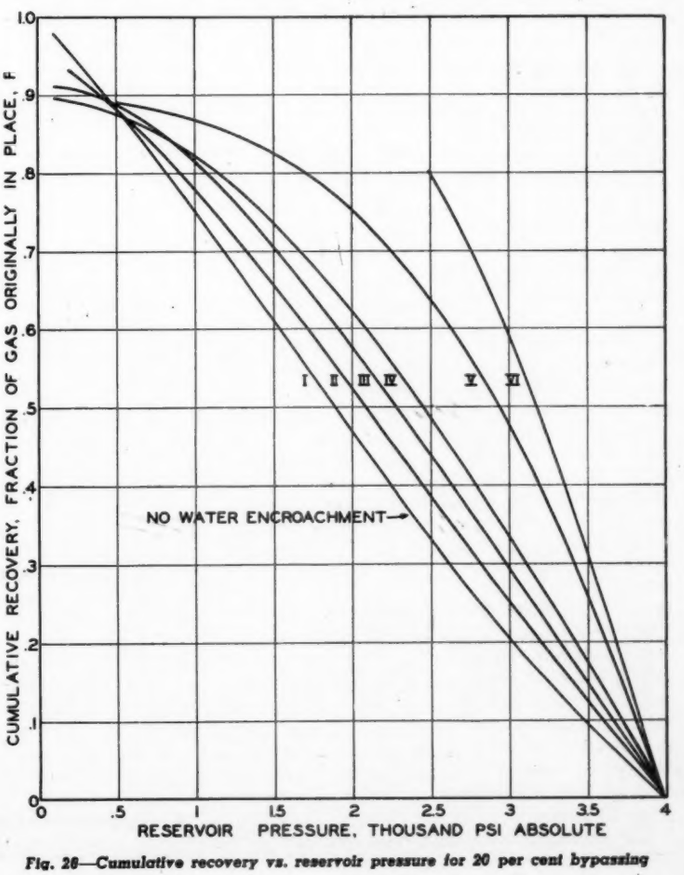


Fig. 26—Cumulative recovery vs. reservoir pressure for 20 per cent bypassing

(2) by not invading some pores at all because of relatively low permeability. Let $V_1 - V$ equal the reservoir space invaded including the space bypassed and X the bypassed space expressed as a fraction of the invaded space, then the approximate

$$\text{Volume of gas bypassed} = X\,(V_1 - V)\,(S_1 + S)/2 \text{ M.c.f.}$$

where $(S_1 + S)/2$ is the average saturation in the invaded reservoir space. Whence, cumulative recovery for a partial water drive and bypassing is defined approximately by

$$C = S_1V_1 - SV - X\,(V_1 - V)\,(S_1 + S)/2 \quad (15)$$

and the corresponding fractional recovery, by

$$F = 1 - (SV/S_1V_1) - X/2\,(1 - V/V_1)\,(1 + S/S_1) \quad (16)$$

Curves 2 through 4 in Fig. 26 are examples of recovery by partial water drive and 20 per cent bypassing. These curves are solutions of Equation 16 which does not account for the additional gas bypassed if a higher-than-average saturation occurs. Higher-than-average saturation occurs if gas is produced at rates sufficiently high to cause a sizable pressure gradient across a reservoir.

13. *Economic limit and abandonment pressures.* The rate of recovery from a gas reservoir in M.c.f. per day which just pays for the direct cost of producing the gas is called the economic limit. The reservoir pressure below which the economic limit cannot be produced is called abandonment pressure.

14. *Ultimate recovery and reserve.*—The cumulative recovery at abandonment pressure is called ultimate recovery, that is,

$$U = V_1S_1 - V_2S_2 - X/2\,(V_1 - V_2)\,(S_1 + S_2) \quad (17)$$

where
U = ultimate recovery, M.c.f.
S_2 = gas saturation at abandonment pressure, M.c.f./bbl.
V_2 = reservoir space at abandonment pressure, bbl.

Abandonment pressure is the sum of the following components: well-head pressure plus the pressure exerted by the weight of the volumn of fluid in a gas well plus the friction drop in a well at economic limits plus the friction loss across a liner if present plus the pressure drop in a reservoir required to produce the economic limit.

If the difference between the initial reservoir and abandonment pressures is small, the value of a large volume of gas originally in place can be insignificant for two reasons: (1) The ultimate recovery may be small, or (2) the rate of recovery may not be essentially different from the economic limit.

The difference between ultimate recovery and cumulative recovery at a given time is called gas reserve. A discussion of the technique for determining gas reserves is deferred pending the development of the physical and economic factors which control ultimate recovery.

15. *Degree of water drive in gas reservoirs.*—A 100 per cent water drive in gas reservoirs is assumed to correspond to initial reservoir pressures, and the degree of a partial water drive is defined as follows:

$$\text{Per cent water drive in gas reservoirs} = 100\,\frac{F_w - F}{F_w} \quad (18)$$

where
F_w = fractional recovery by partial water drive corresponding to a given reservoir pressure
F = fraction recovery by gas expansion alone corresponding to the given reservoir pressure
$F_w - F$ = fractional recovery by water encroachment over and above F

It will be noted (1) that the ordinates of the points on Curves 2 through 4 in Figs. 24 and 26 at a given pressure define F_w, (2) that the corresponding ordinate on Curves 1 define F, and (3) that the difference between corresponding ordinates defines $F_w - F$ for a given pressure. In other words, the degree of a partial water drive in a gas reservoir is defined in terms of the recovery over and above the recovery by gas expansion alone. For example, in Fig. 24 corresponding to the 3,000-lb. pressure and Curve 6

$$\text{Per cent water drive} = 100\,\frac{0.7 - 0.204}{0.7} = 70.9 \text{ per cent}$$

This means that approximately 70.9 per cent of the cumulative recovery is due to encroachment of water, or that in the absence of the water encroachment the cumulative recovery would have been only about 29.1 per cent of the actual recovery.

As a further illustration of partial water drives in gas reservoirs, solutions of Equation 18 for some of the data in Fig. 26 are plotted in Fig. 27. These curves indicate the effect of water encroachment on cumulative recovery and also on ultimate recovery if the abandonment pressure is known. The curves in Figs. 26 and 27 demonstrate that the effect of water encroachment into gas reservoirs on ultimate recovery can be positive, zero, or even negative. Other things being equal, the effectiveness depends on abandonment pressure.

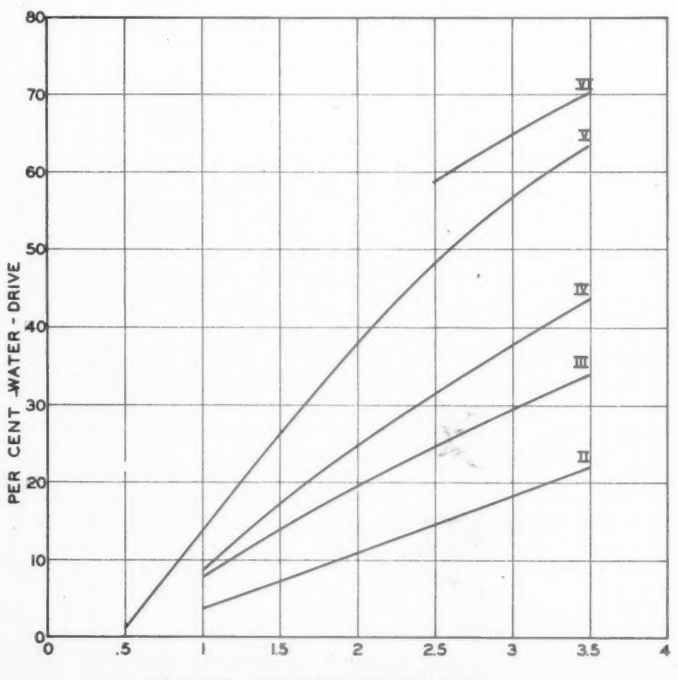


Fig. 27.—Per cent water drive vs. reservoir pressure

16. *Partial water drive vs. valuation.*—The effect of partial water drive on cumulative recovery has a profound influence on valuation of gas properties for ultimate recovery, reserves, well spacing, migration of gas, and present values of future earnings. Valuation of gas properties cannot be considered in this introductory installment. However, it is emphasized at this point that valuations based on pressure decline and cumulative recovery can be erroneous by as much as 100 per cent if the effect of water encroachment is overlooked.

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2. Kay, W. B., Industrial & Engineering Chemistry (1936), 28, 1014.
3. Sage and Lacey, "Volumetric and Phase Behavior of Hydrocarbons," Stanford University Press, 1939.
4. Sage and Reamer, Petroleum Technology, Nov. 1940.
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Also see the reference at the end of Chapter 3.

Bureau of Mines Issues New Bulletins

THREE new bulletins of interest to the oil industry have been released by the U. S. Bureal of Mines. These include the following: "Permissible Methane Detectors," R. I. 3,643, by L. C. Ilsley and A. B. Hooker; "Specific Volumes and Phase-Boundary Properties of Separator-Gas and Liquid-Hydrocarbon Mixtures," R. I. 3,642, by Kenneth Eilerts and R. Vincent Smith; and "Oil-Reservoir Behavior Based Upon Pressure-Reduction Data," R. I. 3,634, by H. C. Miller

The report on specific-volume and phase-boundary properties represents work done under a cooperative agreement between the U. S. Bureau of Mines of the Department of the Interior and the American Gas Association. It points out that knowledge of phase relations of fluids produced from combination wells at the pressures and temperatures characteristic of production from natural reservoirs is essential to efficient recovery and refining practice. An accurate sample of the fluid from such wells may be prepared by mixing (in the proportions of the measured gas : liquid ratio) gas and liquid taken from the separator under conditions of steady flow.

The results of study of a sample so obtained and of mixtures of gas and liquid from the separator combined in other proportions are presented in the report.

The report on permissible methane detectors points out that the requiremenis are based upon safety and adequacy. Approval of an indicating detector requires that it be accurate within close limits.

The report on oil-reservoir behavior based upon pressure-production data summarizes the study made so far on the cumulative pressure decline-cumulative oil recovery relations found to hold for large increments of produced oil in a number of petroleum reservoirs. The procedure in carrying out the study was first to plot cumulative decline of logarithmic charts and then to determine, from study of published field reports and by correspondence with engineers familiar with the fields, the significance of the slopes of the most representative straight line drawn through the plotted pressure-production observations and the reasons for the apparent changes.

The results of the study seem to indicate that a plot of the relation between cumulative decline of reservoir pressure and cumulative recovery of oil on logarithmic charts provides a new tool useful in analyzing reservoir performance in fields when oil-production rates are restricted.

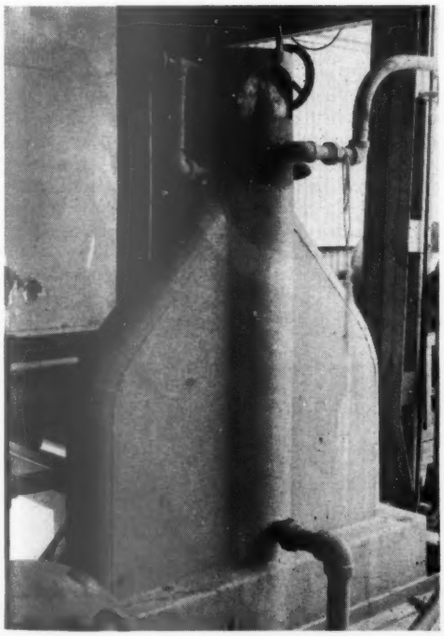
Operating Ideas

Extension Handles on Guide

To facilitate shifting the position of the wire line guide on the coring reel, the crew of this rig welded a handle extension on each side of the guide. With the handles, it is unnecessary for a crewman to climb or reach over the reel to move the guide. The handles are constructed of old rod material. Use of this type guide prevents a workman from becoming entangled in the line.

Railing Protects Control Manifold on Blowout Preventer

A railing guard, constructed of old piping, is placed around the blowout preventer control manifold on a recently assembled Gulf Coast rig. The guard protects the manifold from accidental blows or inadvertent manipulation of the controls. The entire manifold with the guard is unitized to facilitate moving. Each control is conspicuously labeled so that in case of emergency a crew member can instantly reach the proper lever.

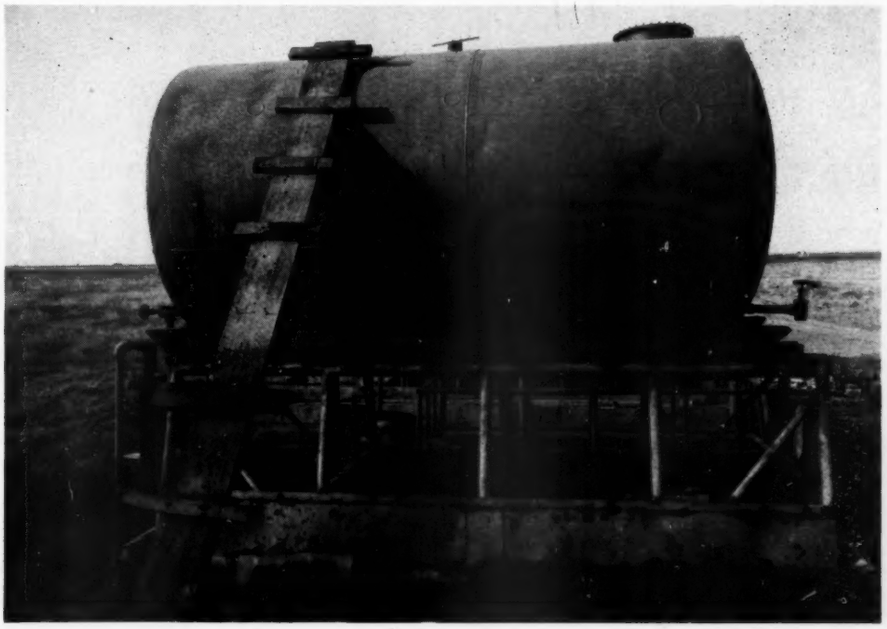


Water-Level Indicator

On drilling barges of one large Gulf Coast company, the hydromatic brakes on the draw works are equipped with a water-level indicator, built by the company. It consists of a water chamber mounted on the brake side of the rig with equalizing lines to the brake. At the top is a water-level indicating arm, visible to the driller, controlled by a float in the water chamber.

Combined Fuel-Tank Support and Small-Parts Rack

A West Texas drilling contractor uses the skid-mounted unit shown in the accompanying picture on one of his diesel rigs. Since it is necessary to elevate the fuel tank at a diesel rig, the tank is placed on top of a rack in which pipe connections and small parts are stored and transported. The rack is divided into two compartments in order to separate heavy connections from the more delicate fittings. Both the tank and the rack are skid-mounted and they can be transported in one piece as shown, or the tank may be pulled directly onto a truck for separate moving.



Fabricating Piping Systems By Electric-Arc Welding (Part 2)

By A. M. HILL
Superintendent of Line Maintenance,
Stanolind Pipe Line Co.

This is the second article of a series, the first installment of which, appearing in the July 16, 1942, issue, described the problems of welding manifolds for pipe lines and discussed the first steps in a procedure developed to improve piping fabrication at a central welding shop. These include the preparation of detailed drawings, as well as special equipment developed for cutting nipples, and aligning and welding nipples.

(c) For aligning flanges on the smaller ells, (3-in. and below) the fitting is clamped in a vise as shown in Fig. 8. The special feature of the alignment is the use of two tapered pins placed in adjacent bolt holes of the flange against which the inside edge of a carpenter's square is lined for checking the flange being in square with the opposite opening of the ell. Assuming that the ell has been plumbed and leveled in the vise an oblique sight across the edge of the square held against the tapered pins and the edge of the level, held in level against the opposite opening provides a quick and accurate test for the flange being square. The same method for obtaining the alignment of flanges on larger ells is used in connection with the jig shown in Fig. 8a. Due to the difference in the size of the bolt holes a set of pins is required for each size and type of flange. Before this procedure was developed, a tedious and more or less inaccurate method was used. The workmen aligned the bolt holes of the flange by establishing four center punch marks on the face of the flange between the bolt holes to divide the flange into four 90° segments, and scribing a mark across the face of the flange between the opposing punch marks. A carpenter's square was then placed on the face of the flange so that the blade was parallel with the scribed lines. This operation required accurate measurements and careful observation by the workmen in order to produce good workmanship. On tack welding the flange and ell become a unit, which is placed on a rotating table for final welding.

Welding Flanges to Ells

Preparatory to welding flanges to ells the adjustable jig shown in Fig. 8a is used for holding ells (size 6 in. and larger) in the proper position for accurate alignment and tack welding. The two angle-iron crossmembers provide a substantial base for this jig and support it in a level position. The hand wheel mounted on the horizontal shaft controls two arms which firmly hold the body of the welding fitting. The slide in the base of the jig is adjusted until the upper end of the welding fitting is perfectly level. After this leveling operation has been accomplished, the flange is then placed on the fitting and perfectly leveled preparatory to tack welding. The work of accurately leveling the 90° welding fitting according to the usual methods represents one of the most difficult and tedious operations; however, it can be accomplished with this jig in a few minutes.

Prior to the development of this jig, the lower end of the fitting was tack-welded to a piece of pipe approximately 6 ft. in length, after which the pipe and the upper end of the welding ell was leveled by the aid of wooden blocks and steel wedges. With such methods, this operation sometimes required hours to effect a perfect alignment.

The instruments used for the alignment consist of an 18-in. by 24-in. carpenter's square, a 24-in. carpenter's level, a combination square set

Fig. 8 (Top, Left)—Method for aligning flanges on smaller ells (3-in. and below)

Fig. 8a (Right) Jig for aligning flanges on large ells

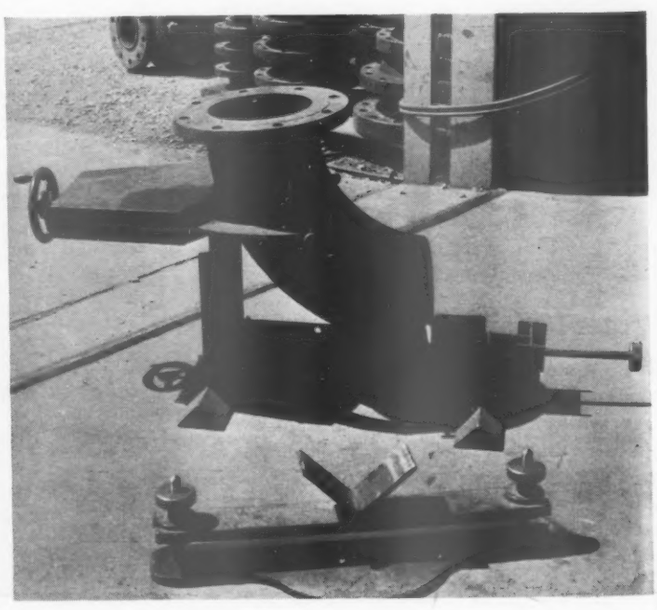


Fig. 9 (Left)—Alignment of flange on the side opening of a tee. Revolving rack at right makes tool storage convenient; kit is for various sizes of taper pins

with center head and bevel protector, a hardened-steel straight edge ¼-in. thick by 3-in. wide by 6 ft. long graduated in feet and inches, and a wooden straight edge 2 in. by 10 in. by 15 ft. long made of No. 1 yellow pine. Only good instruments are used.

(*d*) For aligning a flange on the side opening of a tee the same application of the tapered pins as used in connection with the ells is followed. After placing the body of the tee in the V-shaped jig, the side opening is plumbed and the tee held in position by a chain clamp. By the use of the tapered pins, the square and level, the bolt holes of the flange are squared with respect to the end openings of the tee and the face of the flange is made perpendicular to the axis of the tee. In this case two bolt holes on a line parallel with the diameter of the flange and being the greatest distance from each other are selected for inserting the tapered pins to check for alignment. As shown in Fig. 9 the flange is squared by rotating the flange until an oblique sight across the outside edge of the square brings it in line with the edge of the level placed against the face of one of the end openings. This procedure has provided an accurate and almost foolproof means of obtaining proper alignments. At the same time the work is expedited and the cost has been reduced. Incidentally, the revolving rack in the background provides a convenient place for storing jacks, beveling machines and miscellaneous tools used by the workmen in the various operations. The small kit in the foreground contains the various sizes of taper pins required for aligning the different sizes and types of flanges.

(*e*) After the flanges are welded to the nipple and fittings, the component parts of a member are placed in five V-block jigs (Fig. 10) for leveling and aligning the parts with respect to each other. The alignment is obtained through the V-block jigs being moved sidewise and by their vertical adjustments. These jigs consist of a flat steel base approximately ½ in. thick, two 1-in. diameter threaded bolts which are welded vertically to the steel base. Two hand wheels with threaded collars screw on the vertical threaded bolts and support the V-block thereby providing the adjustable feature which has a wide variation.

V-Blocks for Aligning

Although these V-blocks are portable and can be moved to any desired position, the complete unit has sufficient weight to hold its position firmly after it has been properly placed. The absence of wooden blocks proves the value of this tool. With these special adjustable V-blocks it is possible to accurately and quickly align all sizes of pipe and fittings. The truck in the background shown in Fig. 10 is used to transport the V-blocks from one operator to another. It will be noted that there are several extra V-blocks on the truck. This truck provides a convenient means of transportation as it eliminates considerable effort in lifting and carrying this equipment. It also avoids accidents by providing a place for the equipment which otherwise would be left on the floor where it would present a hazard to the workmen. Due to the accuracy and close tolerances necessary in the final assembly of the component parts only highly skilled workmen perform the operation of aligning these fittings.

Fig. 6 shows a slightly different design of an older model of the adjustable V-block supporting a 90° welding ell and a piece of pipe in alignment preparatory to being tack-welded. The function of the V-blocks is identical with those described in the preceding paragraph. With this type of V-block, the U.S.S. standard nut on the vertical bolt between the floor plate and the V-block is operated with a wrench to effect the adjustment, while the improved V-block described in the preceding paragraph makes use of a hand wheel in this adjustment.

(*f*) Alignment of component parts in a large member, preparatory to welding, is illustrated in Fig. 10a. The procedure is similar to the operation shown in Fig. 10. The reason for the wooden blocks under one of the V-jigs (original type) was that the threads of the adjusting bolts had been damaged by welding splatter. In redesigning the jig, a housing packed with grease (shown in Fig. 10) has been provided to protect the threads of the adjusting bolts.

Before the development of this adjustable V-block, wooden blocks were used for supporting the pipe and fittings while being brought into alignment with each other. The final alignment was effected by driving long tapered wedges under the pipe and fittings. It is also impossible to align the fittings to the close tolerances now possible with these adjustable V-blocks. Previous methods sometimes required several hours' time, and an excessive amount of physical effort, to align such fittings. Development of the V-blocks is a result of efforts to provide equipment which would insure better workmanship, provide greater convenience to the shop personnel, save time and shop costs, and prevent accidents by holding the pipe and fittings firmly in position. Previous methods were hazardous and accidents were quite frequent due to the fact that the barrel and fittings could not be firmly placed on the wooden timbers.

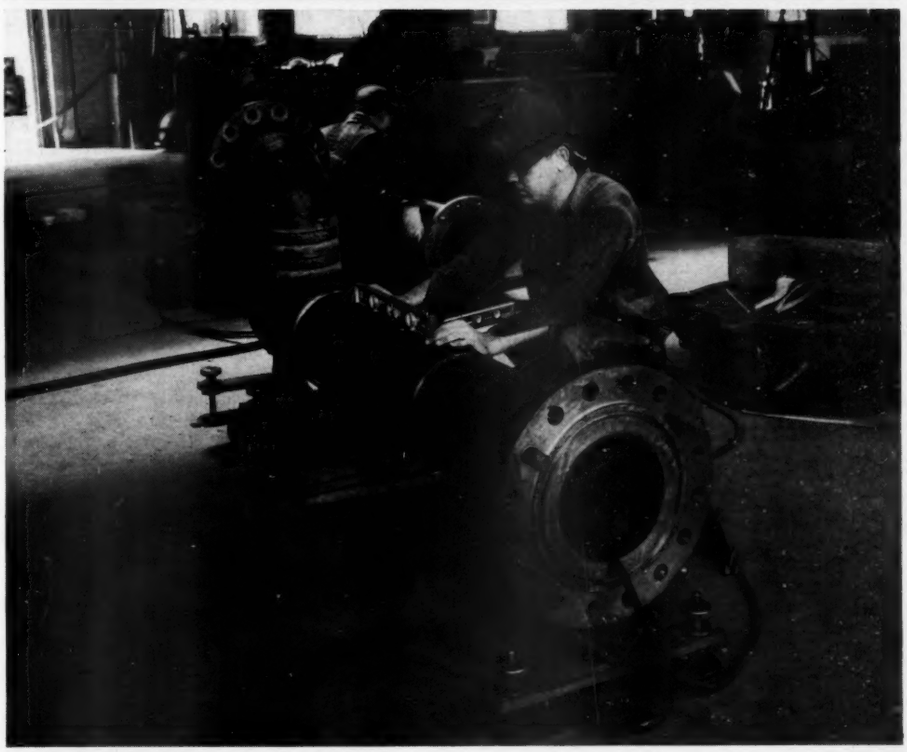


Fig. 10 (Top)—Leveling and aligning parts with respect to one another after flanges have been welded to nipple and fittings. Fig. 10a (Bottom)—Alignment of component parts in a large member preparatory to welding

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, Technical Editor

Alcohol From Petroleum Hydrocarbons

I find an immediate need for information regarding the manufacture of alcohol, formaldehyde and toluene from natural gasoline. Such information to cover plant design and the synthesis of the compounds. Could you tell me where I could get such material?—J. E. B.

The barest information about the chemistry of the production of such materials and the theory underlying their manufacture can be obtained by a search of the technical literature, starting perhaps with "The Chemistry of Petroleum Derivatives," Vol. 2, by C. Ellis, Reinhold Publishing Corp. (1937). Information about plant construction would have to be obtained from engineering consultants or contractors, who by proper pay could be expected to spend the several weeks of time necessary in applying general design fundamentals to the situation at hand.

Ethyl alcohol is being synthesized in large quantities from ethylene gas, and as far back as 1932 the United States production amounted to over 14 million gallons per year. Ethylene can be made from the natural gas, natural gasoline or other petroleum oils by thermal decomposition (or cracking) or more directly by the catalytic dehydrogenation of ethane gas. Thus, the production of ethylene alone is a complicated operation involving perhaps tens of thousands of dollars per daily barrel of alcohol production—although byproducts in the way of natural gasoline, cracked gasoline, fuel gas (largely methane), cracked fuel oil or coke, and perhaps even ammonium sulfate or similar material in order to dispose of excess dilute sulfuric acid, would be useful in justifying some of the expense. In fact, the manufacture of any particular chemical from petroleum or gas as a raw source will seldom be feasible; rather a large number of products will be produced in a single plant and the success of the project will be dependent upon the feasibility of the entire business project including many byproducts. Occasionally a large refinery which is already producing ethylene in large amounts as a byproduct, will find it advisable to approach a particular chemical such as alcohol. The manufacture of alcohol starting with natural gas or with petroleum oils would be most generally somewhat as follows:

From natural gas.

1. Removal of propane and heavier hydrocarbons by absorption.

2. Catalytic dehydrogenation of ethane (perhaps along with methane) for ethylene gas.

3. Purification of ethylene by scrubbing with dilute sulfuric acid.

4. Absorption of ethylene into 98 per cent sulfuric acid to form ethyl sulfuric acid (acid alkyl sulfate).

5. Hydrolize ethyl sulfuric acid in dilute acid solution.

6. Distill alcohols, ethers, etc., from hydrolyzed ester.

7. Rectify or fractionate the impure alcohol for the removal of ethers, higher-boiling alcohols, etc.

8. Concentration plant for recovering the sulfuric acid in concentrated form.

From other petroleum oils.

1. Cracking or reforming (thermal or catalytic) for the production of cracked gases and inadvertently major yields of fuel oils, coke, etc.

2. Removal of propane, propylene and any heavier hydrocarbons from the gas by absorption.

3-8. Same operations as indicated above for natural gas.

Thus, it can be seen that not only alcohol but several other products must be made in order to dispose economically of numerous byproducts stocks.

Numerous attempts have been made to directly oxidize the hydrocarbon gases that are found in natural gas, to oxygenated compounds such as alcohols, ethers, aldehydes, acids, etc., and such reactions have been conducted in the laboratory. It is quite probable that such ventures have not met with commercial success because they have not been approached on a large-enough scale, a scale whereby such materials as ethyl alcohol, methyl alcohol, acetaldehyde, acetic acid, formaldehyde, formic acid, etc., might be produced in a single plant. The separation of these several materials and the purification of them might involve even other chemical agents in large amount and thus necessitate the production of even other products. Ethylene can be combined directly with water to form alcohol by the use of a catalyst but such a method still involves the production of pure ethylene.

The now commercially practical method of alcohol manufacture, i.e., by absorption of ethylene in sulfuric acid followed by hydrolysis, etc., is discussed in some detail in Chapter 13 of Vol 2 of "The Chemistry of Petroleum Derivatives," by Carleton Ellis. Acid of 98 per cent strength is preferred for absorption; stronger acid causing carbonization and the rate of absorption is slow with more dilute acid. Heat is generated during absorption and the temperature must be kept down to 75°-80° C. High pressures (200 lb. per sq. in. and up) increase the rate of absorption. Two compounds are formed, ethyl sulfuric acid and to a lesser degree diethylsulfate.

$$C_2H_4 + H_2SO_4 = C_2H_5O\ SO_3H$$

or,

$$2C_2H_4 + H_2SO_4 = (C_2H_5O)_2\ SO_2$$

Both of these materials can be hydrolyzed to alcohol by means of hot water. The reaction occurs most completely in dilute acid solution, as when using an amount of water that is about equal to the acid sulfate liquor at a temperature which will cause the liquid to boil.

$$C_2H_5O{\cdot}SO_3H + H_2O \rightleftarrows C_2H_5OH + H_2SO_4$$

or,

$$(C_2H_5O)_2SO_2 + H_2O \rightleftarrows C_2H_5O{\cdot}SO_3H + C_2H_5OH$$

Toluene From Petroleum

Our asphalt-base crude oil (18 A.P.I.) is said to contain toluene. Is this a fact and what can we do about it?—R. A. V.

Toluene is present in some aromatic or naphthenic type crude oils in small amounts and may be extracted by making a narrow boiling-range fraction centering around 232° F. in your topping plant. This fraction must then be refractionated and purified by chemical means such as solution in fuming sulfuric acid, dimethyl sulfate, or nitric acid followed by resolution of these materials into toluene. The chemical purification is not simple and the exact methods now in use in commercial plants cannot be disclosed because of our war effort. The gasoline content of the crude oil is of more significance than the gravity (18 A.P.I.), more particularly, the crude oil must contain material boiling in and about 232° F. Obviously, the crude oil should be analyzed for its toluene content.

In general, four main methods of obtaining impure toluene from petroleum materials are available:

1. From aromatic crude oils: The fraction boiling from about 225° to 240° F. will contain essentially all the toluene. The percentage seldom exceeds 1 or 2 per cent based on crude oil and hence these crude oils are not particularly valuable source materials.

2. From cracking-still residues by destructive distillation: Cracking-still residues may be substituted for coal in the oven process of artificial gas manufacture, and one company is utilizing this process (Questions on Technology, The Oil and Gas Journal, p. 44, Feb. 19, 1942). For many years substantially all benzene and toluene have been made as byproducts of coal-gas manufacture. The toluene is, however, a minor product and the expansion of such a process to an extent that would meet our present needs for toluene would result in enormous quantities of manufactured gas and other products.

3. From catalytically cracked gasoline: Most of the catalytic-cracking processes such as the Houdry, Fluid Catalytic, Thermofor, etc., processes produce gasolines that are rich in aromatic hydrocarbons and particularly such processes as polyforming and hydroforming. The gasoline by the last-named process is said to contain 40-50 per cent of aromatic hydrocarbons. Thus, gasolines from these processes constitute a relatively rich source of toluene.

4. By the catalytic cyclization of heptane: This process is probably the most satisfactory of the methods now available. It consists of heating normal heptane at about 1,000° F. in the presence of such catalysts as chromium trioxide, molybdenum oxides or vanadium oxides supported on activated alumina (Ind. Eng. Chem. 32, 528, 1940). Yields of over 90 per cent are said to be possible by recycling. Normal heptane is a hydrocarbon that is relatively abundant in nearly all crude oils, particularly the paraffin or intermediate base oils. It can be separated by extensive fractionation operations.

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B. of M. Reports on Particle-Size Distribution in Drilling Fluids

THE recent report of the U. S. Bureau of Mines on "Correlation of Certain Properties of Oil-Well Drilling-Mud Fluids With Particle-Size Distribution," shows quantitatively what has been realized by mud engineers for some time. The first is that a uniform distribution of particle size is necessary for the mud to have a low filtrate rate, and secondly that the filtrate rate is dependent to a great extent on the amount of colloidal material present in the mud. The report is Bureau of Mines R.I. 3645 and the authors are George L. Gates, assistant petroleum engineer, and C. P. Bowie, supervising engineer, Bureau of Mines, San Francisco, Calif.

The effect of temperature on the filter characteristics is pronounced and tests were carried out in three filter presses at room temperature, 140° and 200° F. The colloid content of the drilling-fluid samples was determined by the hydrometer method which is based on the sedimentation of the mud particles with direct physical measurement of the density of the suspension being used to compute the rate of settling of the solid particles.* The size of the falling particles, expressed as equivalent spherical diameters, is calculated from Stokes' law.

For convenient classification of the solid particles in drilling-mud fluids, particles larger than 0.074 mm. (200-mesh sieve) are assumed to be sand, those smaller than 0.074 mm. and larger than 0.001 mm. equivalent spherical diameter are considered to be silt, and those smaller than 0.001 mm. equivalent spherical diameter are classed as colloids. . . .

The viscosity of the muds was determined at room temperature with a Marsh funnel (1,500 ml. in and 1,000 ml. out) and with a Stormer viscosimeter at 600 r.p.m. Density of the mud was obtained with a Mudwate hydrometer, and the pH was determined with the Beckman pH indicator equipped with a temperature compensator. Because of the small size of some of the samples it was necessary to construct a calibration chart on which the Marsh funnel viscosity was plotted as the ordinate and the Stormer viscosity as the abscissa. The Marsh funnel viscosity was obtained in this manner in some cases.

The ability of the samples of mud to form a relatively impervious mud sheath on a porous formation was calculated upon the basis of the mud-cake permeability from Darcy's law:

$$K = \frac{\mu h}{A \Delta P} \frac{dQ}{dt}$$

where

K = permeability, darcys
μ = viscosity of water:
0.986 centipoises at 70° F.
0.470 centipoises at 140° F.
0.306 centipoises at 200° F.
A = area of filter paper, 47.54 cm²
h = thickness of filter cake at end of 1-hour test
ΔP = 100 lb./in.² = 6.81 atm. pressure drop across the cake
dQ/dt = rate of filtration during last 20 min. of filter test, ml./sec.

Study of the pH data collected indicated no definite relationship between the pH and any of the other measured properties.

Results of the particle-size distribution tests are shown graphically in Fig. 1, which is a trilinear graph in which the base represents 0 per cent colloids by weight, the apex represents 100 per cent by weight and the horizontal lines the intermediate points; the left side of the triangle represents 0 per cent silt and the lower right corner 100 per cent silt, while the right side of the triangle shows 0 per cent sand and the lower left corner shows 100 per cent sand. For analysis of the data the 60-minute filtrate volumes were separated into five groups as follows: 0 to 20 ml., 20 to 40 ml., 40 to 75 ml., 75 to 115 ml., and greater than 115 ml. Each group is plotted in Fig. 1 with an appropriate symbol.

The graph indicates that the composition of the samples that had the lowest filtering rates consisted approximately of 65 per cent by weight (range of 42 to 88 per cent) colloids, 30 per cent (range of 7 to 46 per cent) silt and 5 per cent (range 0 to 13 per cent) sand. The highest filtering rates were obtained from samples composed of about 1 per cent (range 0 to 6) colloids, 94 per cent (range 87 to 100) silt and 5 per cent (range 0 to 13) sand.

The effect of the silt fraction is interesting. It probably furnishes the intermediate-size particles required for a uniform particle-size distribution necessary to the formation of a mud cake of low permeability.

Figs. 2 and 3 show graphically the results obtained by testing the muds having the best and the poorest filter-cake characteristic. The relationship between a relatively uniform particle-size distribution and good filtering properties (Fig. 2) supports the theory that relatively impervious mud cakes are formed by the small particles blocking or plugging the pores between the larger particles of the mud sheath. The mud which has a poor particle-size distribution (Fig. 3) is characterized by a steep slope to the curve.

It should be noted that there is no sharp line of demarcation between size limits of colloidal particles and those not colloidal. Filtering properties of finely divided materials do not change abruptly as the size grades into the colloidal range but they also depend on the nature of the surface of the particles as well as the ions present.

The method of representing the particle-size distribution of the muds by three composition percentages is another factor that may cause variation in the results as represented in Fig. 1 because it does not give a true description of the composition of the different materials.

*A complete description of this instrument is contained in a previous report, "Measuring Particle-Size Distribution and Colloid Content of Oil-Well Drilling Fluids," by George L. Gates, Bureau of Mines R.I. 3549 issued in 1941.

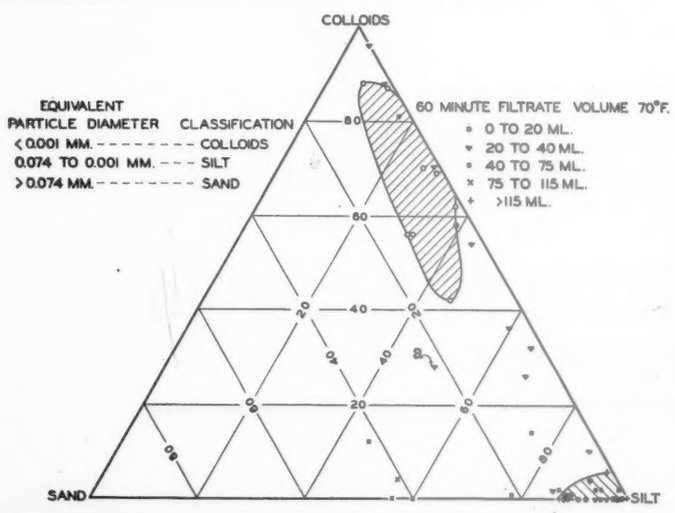


Fig. 1—Relation between rate of filtration and particle-size distribution of drilling-mud fluids. Point "a" represents material 28 per cent colloids, 22 per cent sand and 59 per cent silt.

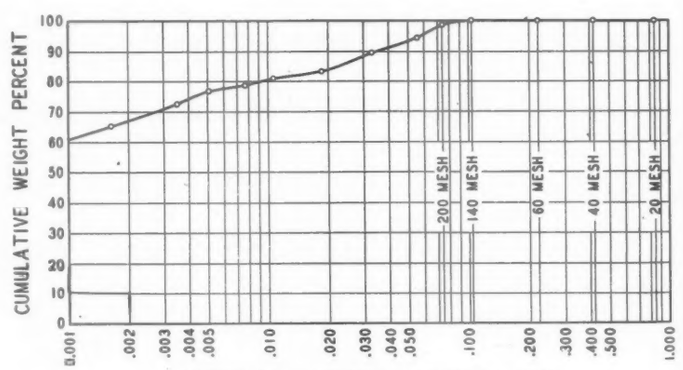


Fig. 2—Particle-size distribution of typical mud fluid having lowest filter rate, 0 to 20 ml. p.h.

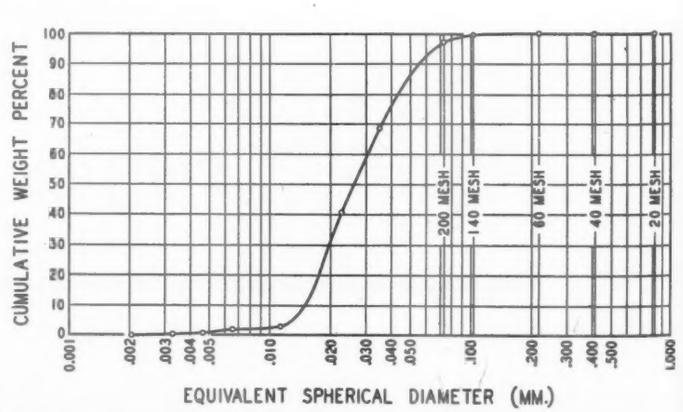


Fig. 3—Particle-size distribution of typical mud fluid having highest filter rate, greater than 115 ml. p.h.

CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

RIG OPERATION

JULY 23, 1942

COMPENSATION INSURANCE COSTS AN IMPORTANT FACTOR

JUST how much an accident costs is hard to determine as there are numerous hidden expenses which are not ordinarily taken into consideration. The training of a new man to replace the injured employe and the danger of his getting injured during the breaking-in period all add to the cost of the accident.

The cost of compensation insurance, however, is real, and can be ascertained by simply looking at the books of any company. Each month the check goes out to the insurance company for the protection of the company's employes. In return for this monthly payment the contractor or company is protected up to a specified amount from damage suits arising out of industrial accidents. His employes are protected to a certain extent as they know that in case of accidental injury while at work they will be paid a stipulated amount while they are prevented by an injury from working.

In most businesses the matter of insurance is taken for granted principally because it is such a small part of the operating expense. This does not hold in the drilling-contracting business where the premiums paid amount from 1 to 3.2 per cent of the total operating expense.

The accompanying table shows the compensation insurance premium payments for several drilling organizations selected at random. These show a wide range and taken as a whole give a fairly good average figure for compensation-insurance costs. Actually there are a number of firms that pay less for compensation-insurance premiums than the minimum shown and there are a number of others which pay more than the maximum shown in the table.

The relation of compensation-insurance costs and labor and supervision costs to the total operating costs cannot be established because of the variation in bookkeeping systems and the fact that some firms include charges which others do not list. Therefore, no significance can be attached to the fact that the firm with the least compensation-insurnce cost is the firm with the least total operating cost.

Total Cost Less

It is interesting to note that the firm paying the least for compensation-insurance premiums has the least total cost ($145.87) for this and for the labor and supervision charges. In other words, the drilling contractor who has reduced his labor and supervision bill by working shorthanded, by payment of lesser wages or by the reduction in supervision, is actually not saving any money. In addition, there is always the risk of having a very severe accident which will run the compensation-insurance-premium costs even higher. The contractor who does not have a sound accident-prevention policy is likewise bearing an unnecessary expense.

There are several ways open to reduce the cost of compensation insurance. The contractor can set up his own insurance fund and be his own carrier; he can examine the insurance field and see if he can get equal or better protection for less money; he can check with the insurance carrier to see that he is getting the minimum rate to which he is entitled, and he can make a determined effort to reduce his accident rate so that he is entitled to a greater experience credit rating.

The first of these steps requires considerable capital and there are other difficulties which makes it impossible for a small organization to carry its own insurance. The second and third methods are problems to be met by the executive management. The fourth is a problem of the executive, operating management, and the personnel. It is also the most effective path to follow when seeking a reduction in these costs.

This is due to the fact that the compensation - insurance premiums paid by the contractor are determined by his accident frequency. He is penalized for each accident suffered and on the other hand is given a credit for each period which he operates without accidents. The fact that the Contractor 1 in the table pays only $5.79 insurance per $100 labor and supervision against $8.89, $11.49, and $12.59 per $100 labor for the others is not mere happenstance.

These figures give some indication of how much money can be spent profitably by the drilling contractor in accident-prevention work. They also show how much expenses can be reduced through a sound program of encouraging foremen and supervisors to educate the personnel to avoid accidents. Thus Contractor 4 has available to him a saving of $4.90 per $100 labor in insurance premiums if he can reduce the number and severity of the accidents on his rigs.

This reduction can be obtained principally by encouraging accident-prevention consciousness among the men as the "human element" is responsible for a large majority of the lost-time industrial injuries. Rushing and hurry and the usual "hurly burley" associated with the work of some crews can be eliminated. Satisfactory personal relations among the members of the crew and between the crew and the tool pusher will also help.

Better maintenance of equipment and the use of approved or carefully designed guards will also be helpful in preventing accidents.

TABLE 1—COMPENSATION INSURANCE, LABOR, AND TOTAL OPERATING COSTS

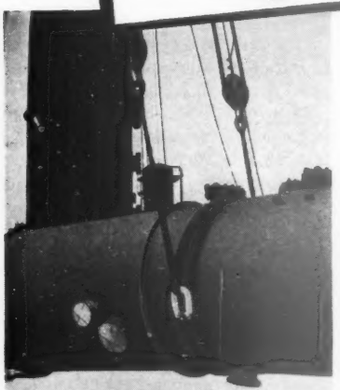
	Contractor 1	Contractor 2	Contractor 3	Contractor 4
Compensation-insurance cost	$7.61	$12.61	$15.49	$16.75
Labor and supervision	138.26	141.92	135.63	133.01
Total operating costs	$555.65	$601.39	$542.78	$656.37

Easy to Answer!

▸▸ *Question:* What is the safe, quick, economical way to handle a load that is

HEAVY... like a big refinery tower?
IRREGULAR... like a casting?
SLIPPERY... like a stack of pipe?
UNWIELDY... like a drum or barrel?

See Answer Below



Hoisting 75-ton refinery tower with non-slip plaited sling.

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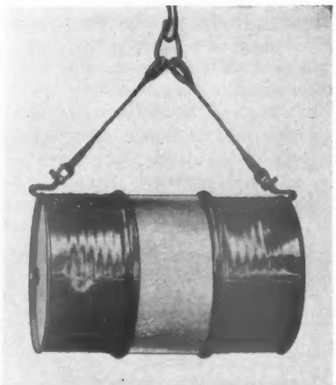

Hooks grip flanged drum firmly; other fittings for odd shapes.

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CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

RIG OPERATION

JULY 23, 1942

AVERAGE DAILY COSTS FOR ROTARY RIGS ARE HIGH

AVERAGE figures are apt to be both misleading and confusing but they do offer a certain gage on which to base operations. They also provide some basis for analysis and for determining the most effective sphere of action. This is true whether the averages concern stock-market prices, the depth of wells, daily average production or the cost of operating a rotary drilling rig.

The accompanying table gives the daily average charges for a drilling rig while in operation. It is broken down into the 17 major divisions under which expenditures are charged. This table is based on data from a number of sources and probably no drilling rig in actual operation will show the same charges or the same total. However, it includes operating charges for both large and small rigs operating on both shallow and deep holes.

The variation in charges for drilling-rig operating costs depends on a number of factors. For instance the charge shown for bits would be very high for a rig operating in a field where the formations were mainly unconsolidated and a fish-tail bit was employed. On the other hand the charge is extremely low for a rig operating in "hard-rock" country where four rock bits are worn out each 24 hours.

The same is true of depreciation. For a rig costing $150,000 the charge is much too low. For the rig which is designed to drill to 3,000 ft. maximum and which cost around $40,000, the charge is much too high.

Hauling is another highly variable figure. Generally, the bulk of this experience occurs during the moving-in and rigging-up period and during the tearing-down and moving-out period. There is also considerable daily hauling and for simplicity all such charges are lumped together and averaged out for the entire time spent on the well. The cost of hauling mounts rapidly whenever the weather or ground conditions become bad; it may be as much as 10 times the cost for moving during good weather.

The fuel charge depends on the type of fuel used. For a steam rig operating on gas produced on the lease, the actual charge may be extremely low. On the other hand, a rig running in a remote area and using gasoline for fuel, might pay two times the amount shown in the table for this charge.

The charge for cleaning the location, digging the pits and erection of the derrick is likewise high for shallow wells and may be either high or low for deep wells. It should be noted that these are daily charges and a deep well, which would require considerable foundation expense, may take a long time to drill. The charges are thus spread over as many as several hundred days and would be much less. A well to the same depth, but in an area where the digging was easy, would require the same expenditure but would have to be distributed over a very short period with a consequent higher daily charge.

The charges for administration naturally vary with the company, the number of rigs operated, the company from which the contracts are obtained, whether the rigs are widely scattered or consolidated in a rather small area and a number of other factors. As this expense continues when the rig is not operating it is also higher during the periods when field activity is slow.

The cost of mud used on a job runs anywhere from a few dollars per well to over $100,000. Generally, the contract price per foot is adjusted to take care of this charge, or the contractor supplies a specified amount of mud after which the company having the well drilled supplies the remainder.

Compensation insurance is discussed elsewhere in this series and will not be taken up here.

The charge for fishing looks like a partial duplication at first glance as the major cost of fishing is in rig time and labor. However, the cost of a fishing job does not stop there. There is tool rental, which may mount to several hundred dollars per day, and there is the loss and damage to the equipment. For instance, in case a fishing job fails to recover a drill collar, the cost of fishing mounts rapidly.

The charge for water applies to steam rigs and is probably low for that type equipment. On power rigs, the charge would generally be a great deal less.

An interesting item is the $11.52 daily for wire lines. This charge is high due mainly to abuse of this item. Better care of the wire rope would result in a substantial reduction in this charge.

The amounts listed for oil and grease, taxes and fire insurance may be considered as incidentals. However, in the aggregate they amount to a fair sum of money.

Assumption that the average rig makes approximately 150 ft. per day, results in an average of $4.32 per foot of hole drilled for the rotary drilling contractors to pay operating expenses and get the depreciation which will enable them to keep their equipment in first-class condition. Here again the average figure does not reveal the true picture as a small rig, operating in shallow territory and completing a well a week, can obviously make money at a much less figure.

The accompanying table is mainly useful for estimation purposes with each contractor making the adjustments peculiar to his own situation. It also indicates the charges for which the most money is being spent and the ones which are most worthy of study in an effort at over-all reduction in operating costs.

COST OF OPERATING DRILLING RIG

Labor and supervision	$137.56
Depreciation	116.17
Bits	82.62
Administration (executive salaries, overhead, travel, auto)	60.47
Supplies	48.03
Hauling	26.04
Fuel	23.44
Derrick, pits, cellar, location	21.85
Mud	21.36
Compensation insurance and payroll taxes	14.97
Fishing	13.94
Machine-shop work	13.69
Water*	12.78
Wire line	11.52
Oil and grease	6.78
Taxes	6.25
Fire insurance	1.84
Total	$649.31

*Steam rig.

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Preformed wire rope
for America's Production

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Engineering Fundamentals

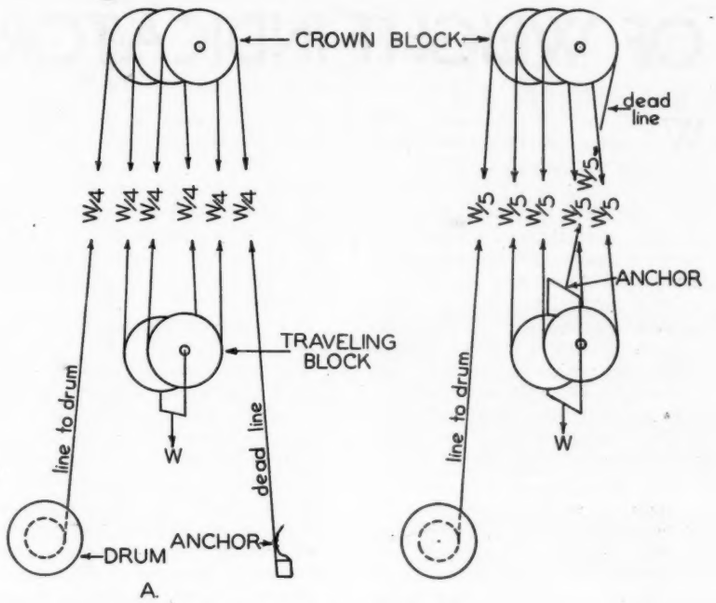
A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 28

JULY 23, 1942

LOAD IMPOSED ON DERRICK

IT is rather difficult for a person who has not analyzed the situation to believe that the load imposed on the derrick structure by a block and tackle hookup is greater than the actual load lifted by the traveling block. Proper analysis, however, will clearly demonstrate that the load on the derrick does exceed the weight lifted by the lower block. The amount that the derrick load exceeds the load lifted depends upon the number of lines used and also upon the position of dead-line anchorage.

As a general statement, an increase in the number of lines used will result in less difference between the load on the derrick and the load lifted. And, too, if the dead line is anchored to the top of the traveling block rather than to a derrick sill or other stationary position on the ground, the load imposed on the derrick for a given load on the traveling block will be less.



A.

Example 1.

Problem.— Given a block-and-tackle system with the dead line anchored to the ground as illustrated in Fig. 1-A. When lifting a load, W, on the traveling block of 100,000 lb. (including weight of traveling block) what load would be imposed on the derrick structure in each of the following cases?

1. Two sheaves on traveling block.
2. One sheave on traveling block.
3. Three sheaves on traveling block.
4. Four sheaves on traveling block.

Solution.— (1) Fig. 1-*A* shows two traveling-block sheaves in use. W = 100,000 lb., by the given conditions of the problem. This total weight will be supported by all the lines in contact with the traveling block. That is, we can picture each line being broken above the block and the total weight supported by a force of $W/4$, or 25,000 lb. in each line.

Now all of the "lines" in reality form one continuous rope, and if friction is neglected the tension in one part of the rope is the same as in any other part. So each "line" in contact with the top of the derrick will exert a downward pull equal to $W/4$, or 25,000 lb.

Since there are six such lines, the total downward pull on the top of the derrick is 6 × 25,000, or 150,000 lb.

2. With one traveling block sheave, two "lines" would be supporting the 100,000-lb. load. So the tension in the rope would be 100,000/2, or 50,000 lb. Under such conditions, there would be four "lines" pulling downward on the derrick; and, thus, the total load on the derrick would be 4 × 50,000 or 200,000 lb.

3. By a similar method the load on the derrick when using three traveling block sheaves is found to be 100,000/6 × 8, or 133,333 lb.

4. Using four traveling block sheaves the load on the derrick would be 100,000/8 × 10, or 125,000 lb.

Examination of the results of the calculations just completed shows that when lifting a given load, the load imposed on the derrick progressively decreases as the number of lines increase.

It is also of interest to note that the pull upward on the dead-line anchor and also the force exerted by the hoist is equal to the tension in the line, and is calculated by dividing the load lifted by the number of lines in contact with the lower block.

Example 2.

Problem.—Repeat the calculations made in Example 1, all given factors being the same except that the dead line is anchored to the top of the traveling block.

Solution.—(1) Fig. 1-B shows the hookup with two sheaves in the traveling block and the dead line anchored to the top of the block.

With this arrangement, there are five lines supporting the total weight, so each line lifts 100,000/5, or 20,000 lb. Then the tensional load on the rope is 20,000 lb. The load on the derrick is 20,000 × 6, or 120,000 lb.

2. With one sheave used in the lower block, the load on the derrick is 100,000/3 × 4, or 133,333 lb.

3. With three sheaves used in the lower block, the load on the derrick is 100,000/7 × 8, or 114,286 lb.

4. With four sheaves used in the lower block, the load on the derrick is 100,000/9 × 10 = 111,111 lb.

A summary of the results of calculations in Examples 1 and 2 is shown in the following tabulation:

No. sheaves in traveling block—	1	2	3	4
Load on derrick, lb.:				
Dead line anchored to ground	200,000	150,000	133,333	125,000
Dead line anchored to lower block	133,333	120,000	114,286	111,111
Tension in hoisting cable, lb.:				
Dead line anchored to ground	50,000	25,000	16,666	12,500
Dead line anchored to lower block	33,333	20,000	14,286	11,111

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

No. 29

JULY 23, 1942

PRINCIPLES AND OPERATION OF WEIGHT INDICATORS

WHEN weight indicators first came into use, they were applied principally for the purpose of preventing an overload on the derrick structure. For that purpose it was not necessary that they be precisely accurate. In later years, however, these instruments have been made more sensitive and accurate, so that weight-indicator readings can be more extensively applied to analysis of drilling conditions, crew efficiency, and service life of drilling equipment.

Weight indicators may be divided into two classes, namely: Indicating and recording. The indicating type is used principally by the driller to ascertain the weight on the bit while drilling and to observe the behavior of drill pipe and casing while running it into, or pulling it from, the well. In practically all fishing operations, the weight indicator is an almost indispensable device. The recording type of weight indicator furnishes a continuous record that may be applied in any or all of the following considerations:

1. In analysis of drilling-time data for purpose of well-log correlation.

2. Diagnoses of failures in drill-pipe string or other equipment.

3. Analysis of the performance of the drilling crew.

In connection with the second and third points mentioned above, equipment failures are sometimes attributable to careless practices of a drilling crew. On the other hand, failures often occur due to uncontrollable circumstances. In some cases, the driller may be cleared of blame for a failure or accident by the record produced from the weight indicator; whereas in other cases the weight indicator record may indicate certain bad practices that caused the accident.

Several mechanical devices of various designs have been applied to measuring the weight on the traveling block. These include:

1. Instruments on the traveling block or hook to measure directly the load swinging on the blocks. This type of instrument eliminates some of the errors due to friction of the sheaves and lines of the block-and-tackle system, which are inherent in any method dependent upon relative tension in the dead line. This method has the disadvantage, however, of allowing no easy means of communicating the reading obtained to a stationary gage located where the driller can easily read it.

2. Instruments attached to the dead line.

(*a*) A scale device anchored to the derrick foundation and attached to the lower end of the dead line.

(*b*) Devices measuring the tendency of a deflected portion of the dead line to straighten out under load, which is indirectly related to, and can be converted to approximate load on the traveling block. This is the most common type of indicator in use today.

For an accurate indication of weight with an instrument on the dead line it is important to get, as nearly as possible, a free equalization of load through the crown and traveling blocks. It is particularly important to have the dead sheave in the crown block as frictionless as possible. Thus, even though this sheave does not turn, it should have roller bearings and be kept well lubricated.

There has been a tendency with drilling crews to speak of the weight on the blocks as "so many points." This is very loose terminology since the value of a point of weight in pounds is not the same for various sizes of line, various numbers of lines, or various positions on the indicator dial. The accompanying curves, based on data published by Martin-Decker Corp., will allow calculation of the weight on the hook for a given number of points on a Martin-Decker weight indicator.

The method of using these curves will now be demonstrated.

Example

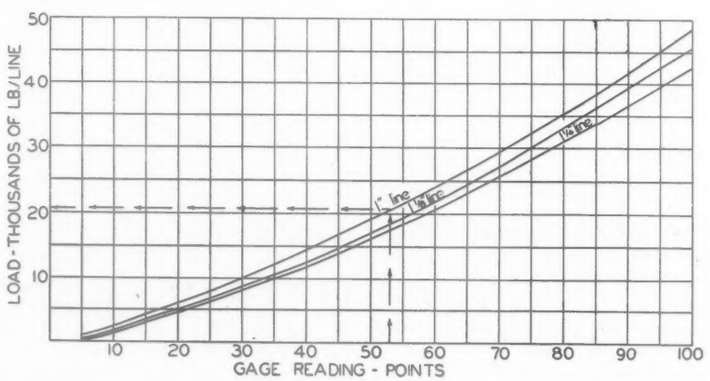
Problem.—At a certain rotary drilling well, a 1-in. drilling line and four sheaves in the traveling block are in use. With the empty traveling block and hook suspended in the derrick, the weight-indicator gage reading is 5 points. What is the hook load in pounds when the gage reading is 53 points?

Solution.—From the accompanying curve for a 1-in. line, it is found that a gage reading of 53 points represents a load of 20,700 lb. per line when using a 1-in. line.

Then, since there are eight lines in contact with the traveling block, the total load being lifted, including the weight of the block and hook is 20,700 × 8, or 165,600 lb.

From the accompanying curve for a 1-in. line, it is found that a gage reading of 5 points represents a load of 1,050 lb. per line. Then, the weight of the traveling block and hook is 8 × 1,050, or 8,400 lb.

The load on the hook, then, is 165,600 — 8,400, or 157,200 lb.



Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

Pipe-Line Activity

Pipe Lines Recently Approved by Congress Have Doubtful Status

Included in the transportation bill passed by the Senate last week by one vote, there are appropriations totaling $23,000,000 for the construction of pipe lines. It is questionable whether this appropriation for pipe lines contributes in any way to a solution of the problem of supplying the East Coast. Of this sum, $13,000,000 was appropriated for a crude-oil line from the Tinsley area of Mississippi to Savannah, Ga., or Charleston, S. C., which appears to be a new version of the Tapco scheme; $10,000,000 was also appropriated for pipe lines across Florida. Some opposition was leveled at the appropriation of $10,000,000 for the Florida lines because OPC already had sufficient authority to provide for building necessary lines and since OPC has already authorized the laying of a line across northern Florida at a cost of $3,000,000. Proponents of the increased expenditure said that the larger sum will provide for more than one line. Construction of pipe lines cannot proceed without the approval of OPC, WPB, the Army, and the Navy. Secretary of War Stimson has been outspoken in his disapproval of the proposed line from Mississippi eastward.

The bill carried total appropriations for all purposes of $93,000,000; of this $44,000,000 would be spent on a canal across Florida and $26,000,000 would be spent for extension of the Gulf Coast waterway from Corpus Christi to Brownsville, Tex., and for deepening of waterway between Appalachee Bay, Florida, and Corpus Christi.

Long-time opponent of the Florida canal, either in ship or barge form, Senator Vandenburg, Republican, Michigan, said:

"The country looks upon the Florida canal as the supreme boondoggle of all time."

Many attacked the canal plan on the grounds it would take too long to build and would use critical materials needed in the war effort.

Senator Andrews, Democrat, Florida, disclosed that another canal project was under consideration—that of cutting a 12-mile link between the St. Johns River and the Indian River in Florida to provide a new inland channel.

Seven Contractors Prepare To Lay 24-In. Crude Line

Petroleum Coordinator Harold L. Ickes has announced award of contracts to seven companies for construction of a 550-mile oil pipe line from Longview, Tex., to Norris City, Ill., with two smaller branch lines from Norris City to Mount Vernon, Ind., and Enfield, Ill.

Mr. Ickes said contractors already were assembling men and equipment and "the dirt should be starting to fly very shortly."

"Judging by the progress to date, we confidently expect to have the line completed and actually in service by Christmas," he said.

Contracts for the 24-in. main line—the world's largest oil-carrying pipe line—were awarded on a cost plus fixed-fee basis, according to B. E. Hull, general manager of War Emergency Pipeline, Inc., a company organized by the oil industry to supervise the construction.

Each contractor will build a single section of the line as follows:

1. From Longview, Tex., to Arkansas-Texas state line, Williams Brothers Corp., Tulsa.
2. Arkansas-Texas state line to Gurdon, Ark., O. E. Dempsey Construction Co., Tulsa.
3. Gurdon to Little Rock, Ark. (Arkansas River), Anderson Brothers, Tulsa.
4. Little Rock to Missouri-Arkansas state line (St. Francis River), Oklahoma Contracting Co. (T. R. Jones), Dallas, Tex.
5. St. Francis River to Illmo, Mo. (Mississippi River), to C. S. Foreman Co., Kansas City, Mo.
6. Mississippi River to Harrisburg, Ill., Ray E. Smith Construction Co., El Dorado, Kans.
7. Harrisburg, Ill., to Norris City, Ill., to Sheehan Pipe Line Construction Co., Tulsa.

The Sheehan company also received a contract for construction of a 14-in. branch line from Norris City to Mount Vernon, Ind., where part of the oil will be loaded on barges for shipment up the Ohio River to Pittsburgh, and for a 10-in. branch line from Norris City to Enfield, Ill., where contact will be made with pipe-line facilities to the East.

Contracts for the construction of eight river crossings were awarded to Williams Brothers. The line will cross the Red, Little Missouri, Ouachita, Arkansas, Cache, White, St. Francis, and Mississippi rivers, the last named at a point just below Cape Girardeau, Mo.

According to announcements the line would deliver 300,000 bbl. of crude oil daily at Norris City. About 120,000 bbl. will be carried to Mount Vernon, Ind., for barge shipment east; about 50,000 bbl. will remain in the Middle West to offset declining production in southern Illinois oil fields, and the remainder will go to the eastern shortage area by pipe line and tank car.

The line is being financed by the Government through the Defense Plant Corp., a subsidiary of Reconstruction Finance Corp.

Pipe-Line Repair and Maintenance Trucks Exempt From ODT Order

WASHINGTON, D. C.—John L. Rogers, Director of Motor Transport of the Office of Defense Transportation, has informed the Office of Petroleum Coordinator that ODT is in agreement with the OPC position that trucks used in the maintenance, operation, and repair of pipe lines are engaged in public-utility business. This concept exempts pipe-line repair and maintenance trucks from ODT Order No. 6, requiring that mileage be reduced 25 per cent below last year.

Application of the order to trucks used in new pipe-line construction is still under study, but an arrangement probably will be made for special permits exempting such trucks from the mileage curtailment provisions for specific construction jobs.

Bay Petroleum Will Have Lindsborg-McPherson Line

The program of Bay Petroleum Co. calls for the laying of an 18-mile, 3-in. crude-oil line from the Lindsborg pool, Kansas, to the company's refinery at McPherson, Kans. The company has been hauling crude from the Lindsborg pool by trucks.

Outlet for Polo Gas Field Will Be Built Soon

Arrangements have been made to build a 12-in. pipe line from the Polo shallow gas pool in Caldwell County, Missouri, a distance of 38 miles to the Cities Service line, according to Tiger Oil & Pipe Line Co. Skelly Oil Co. holds all the leases on which the Polo wells are located. There are 16 wells with an open flow of approximately 35,000,000 cu. ft. daily and Skelly has estimated the total gas in the field at 2,000,000,000 cu. ft.

Contract Has Been Let for El Dorado-Helena, Ark., Line

Contract has been let for construction of the Project Five Pipe Line for refined products to Williams Brothers Corp. The line will consist of 158 miles of 10-in. from El Dorado to Helena, Ark. Pipe for the line will be dug up by the contractor in Texas. Products will reach El Dorado from the Gulf Coast through lines of the Gulf, Texas and Magnolia systems, formerly used for shipping crude southward.

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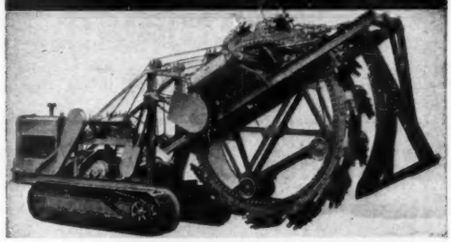

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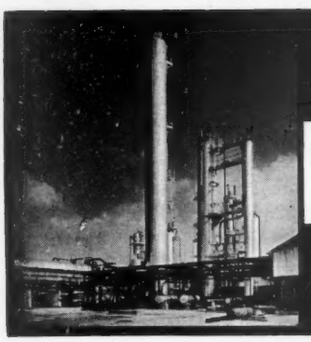

REFINERY ACTIVITY AND EXPANSION

Chromium and Nickel Content Of Refinery Metals Limited

WASHINGTON, D. C. — The quality of chromium and chromium-nickel alloy iron and steel used by the oil industry for many purposes is reduced by supplementary conservation order M-21-g issued by the War Production Board early this month.

The order sets up maximum standards for these alloys for various uses, including oil refineries and power plants, and in most cases the new specifications authorize less chromium than customarily used. One effect of this order is to reduce the life of such equipment and cause earlier replacements, but officials state that the new specifications are not so low as to endanger safe operation.

The order is one more step in the process of reducing the quantities of critical materials used by all industries.

Consumers are prohibited from specifying higher than necessary temperature requirements when ordering heat-resistant chromium or chromium-nickel alloys. In rebuilding or repairing units, refiners are prevented from using more than 10 per cent chromium and chromium-nickel alloy in excess of such heat-resistant metal in the original plant.

Part 2 of Order M-21-g applies specifically to the petroleum refining branch of the industry and to the companion synthetic-rubber plants. Part 3 regulates the use of chromium in power-plant equipment. Provisions of these two pertinent sections follow:

PART 2

	Maximum per cent — Chromium	Nickel	Nickel plus chromium
Analysis A	None	None	None
Uses: For all uses, operating at temperatures below 900° F.			
Analysis B	6	0	6
Uses: For all uses, operating at temperatures between 900° and 1,400° F.			
Analysis C	18	8	26
Uses: For all uses, operating at temperatures between 1,400° and 1,600° F.			
Analysis E	25	12	37
Uses: For all uses, operating at temperatures above 1,600° F.			

PART 3

Analysis A	None	None	None
Uses: (1) For economizer supports and sleeves; (2) for boiler dampers; (3) for all stoker parts; (4) for soot blowers, operating at temperatures below 1,600° F.; (5) for seal plates, wall castings and door liners; (6) tubing for feed-water heaters.			
Analysis B	18	8	26
Uses: For that part of chemical feed-pipe connections inside the boiler drum.			
Analysis D	27	9	36
Uses: For soot blowers, operating at temperatures above 1,600° F.			
Analysis E	25	12	37
Uses: (1) For superheater supports, clamps and baffles, operating at temperatures between 1,300° and 1,600° F; (2) for boiler nonpressure parts exposed to direct furnace temperatures of over 1,600° F.			
Analysis F	25	20	45
Uses: (1) For superheater supports, clamps and baffles, operating at temperatures above 1,600° F; (2) for fuel burners—oil, gas and coal—where parts are directly exposed to furnace temperatures.			
Analysis H	15	65	80
Uses: For fuel burner impeller plates ⅛ in. thick.			

Note: With the exception of Analysis A, an addition of 2 per cent in content of chromium and 2 per cent in content of nickel in the analyses designated in this Schedule A is permissible to allow for the use of scrap and for variations in melting and laboratory procedures. For example: In the case of Analysis C (18 per cent chromium, 8 per cent nickel) up to 20 per cent chromium and 10 per cent nickel is permissible.

Revised Design Will Not Delay Rubber Synthetics' Project

CHICAGO.—Production of synthetic rubber from petroleum hydrocarbons is scheduled to begin by June 1, 1943, at the Gary, Ind., plant which is now in the early stages of construction, despite delays caused by changes in the original plans and specifications to reduce the amount of steel and other critical materials used in construction.

Preparation of the 900-acre plant site, begun several weeks ago, is expected to be completed early next month.

W. B. Plummer, formerly with Standard Oil Co. (Indiana) and now president of Rubber Synthetics, Inc., the corporation organized to construct and operate the rubber plant under contract with Defense Plant Corp., disclosed that equipment orders totaling about $5,000,000 have been placed.

Production of 100,000 tons a year is planned, instead of the 150,000 tons originally projected. Mr. Plummer said the total cost probably will be about $75,000,000 "or a little less." The original estimate was $100,000,000.

"In view of the increased pressure to economize on steel and other vital materials," Mr. Plummer said, "we redesigned the plants and will use a different type of feed stock from refineries. This has reduced costs 25 to 30 per cent in some particulars. The changes held us up some, but despite the delay we still are hopeful of being in operation by the previously set deadline of June 1, 1943."

Rubber Synthetics, Inc., owned jointly by the Standard Oil Co. (Indiana), Sinclair Refining Co. and Cities Service Co. (Delaware), will produce butadiene, major component of buna rubber. Another section of the Gary project will be operated by the Dow Chemical Co. and will produce styrene. The polymerization phase of operations, combining butadiene, styrene and other chemicals to produce latex will be produced by United States Rubber Co., Firestone Tire & Rubber Co., and another company not yet designated.

Part of the charging stock for the butadiene plant, consisting essentially of butene, will be drawn from several refineries in the southern part of Illinois, it was understood, under revised arrangements.

Chlorinated-Rubber Patents Seized by Alien Custodian

WASHINGTON, D. C.—Leo T. Crowley, alien property custodian, has seized an additional group of more than 750 enemy-owned patents, among them about 200 patents of I.G. Farbenindustrie not previously vested. Included also were a number of patents owned by Japanese, Italian, and Hungarian corporations and individuals.

Sketches of Plant Operators . . .

M. J. RATHBONE, president of the Standard Oil Co. of Louisiana, has one of the most critical tasks in the petroleum industry in shouldering the responsibility of consummating the ambitious participation of his company in the production of war materials. Mr. Rathbone's chief attention is devoted to operation and construction of new units at the Baton Rouge refinery where aviation gasoline, synthetic rubber and other war materials are being produced or will be manufactured by units now projected.

Mr. Rathbone's service with Standard of Louisiana started in August 1921, when he was employed at Baton Rouge and first assigned to drafting and designing miscellaneous refinery equipment.

In 1922, he became construction engineer and during the next 2 years supervised erection of all new processing equipment at Baton Rouge. For the next 5 years, Mr. Rathbone was in charge of all development, design, construction and operation of cracking equipment at Baton Rouge. During this period a number of cracking coils were designed, built and placed in operation.

From 1929 to 1931, Mr. Rathbone was assistant to L. Link, then general superintendent of the refinery, and his general functions continued in the designing and operation of various types of processing equipment.

He became general superintendent in 1931 and, in 1933, was made assistant general manager of the manufacturing department of the company. He became vice president and general manager in charge of manufacturing in 1935 and on October 1, 1936, Mr. Rathbone was elected president of the company, succeeding J. C. Hilton.

Mr. Rathbone's connection with petroleum refining and with the Standard organization was virtually inherited. His father, M. J. Rathbone, Sr., was a former manager of Standard Oil Co. of New Jersey's refinery at Parkersburg, W. Va., and was connected with that company for approximately 25 years. The Standard of Louisiana president was born in Parkersburg March 1, 1900. He qualified for a technical career in the petroleum refining industry by graduating from Lehigh University, Bethlehem, Pa., with a degree in chemical engineering, the year he joined Standard of Louisiana.

WHO'S WHO IN REFINING

Cities Service Oil Co. (Del.) and Cities Service Oil Co. (Pa.)

REFINERY operations of Cities Service companies are divided under the managership of two subsidiary organizations. Middle western and Mid-Continent operations are under the direction of Cities Service Oil Co. (Delaware) and those in the eastern section are carried on through Cities Service Oil Co. (Pennsylvania).

SUMMARY OF OPERATIONS

Delaware Division

Location—	Capacity, bbl. daily Crude	Cracking
East Chicago, Ind.	30,000	11,000
Ponca City, Okla.	11,000	2,500
Okmulgee, Okla.*	4,000	600
Total Delaware division	45,000	14,100
Pennsylvania Division		
Braintree, Mass.	20,000	7,700
Linden, N. J.	12,000	..
Petty's Island, N. J.	20,000	4,500
Titusville, Pa.	3,000	.....
Total Pennsylvania division	55,000	12,200
Total both companies	100,000	26,300

*Plant shut down.

Three refineries in the Cities Service of Delaware holdings are located in Indiana and Oklahoma. One of the two Oklahoma plants is now shut down, leaving the company a net daily crude capacity in the two active refineries of 41,000 bbl.

Four refineries under the ownership and managership of Cities Service of Pennsylvania are located in New Jersey, Massachusetts and Pennsylvania. Largest and most complete of the eastern refinery operations is at Braintree, Mass., where distillation capacity of 20,000 bbl. daily is augmented by cracking facilities capable of handling 7,700 bbl. daily.

The East Chicago, Ind., refinery is the largest single plant operated by either of the two companies, having crude capacity of 30,000 bbl. daily and 11,000 bbl. of cracking.

Refinery operations are supported by a network of affiliated pipe-line facilities, conveying crude from southwestern and Mid-Continent producing fields to the interior plants and to a smaller extent in the New Jersey and Pennsylvania areas. Normally, the New Jersey and Massachusetts plants are supplied with a majority of their crude requirements by owned and chartered tankers plying between the northern Atlantic terminals and loading points on the Gulf Coast.

Refinery subsidiaries of Cities Service Co. are woven into the integrated operations which blanket all phases of the industry, including a substantial volume of foreign trade during normal years.

Most of the refinery development and construction operations for more than a year have been linked with the petroleum industry's obligations to supply large volumes of war materials to the United States military forces and to lend-lease countries. The Delaware company is participating in the production of aviation gasoline and is one of three companies planning to produce large volumes of hydrocarbon components for synthetic rubber to feed a new plant in the Middle West.

In addition to the operations carried on by directly owned subsidiaries, Cities Service has a substantial interest in Richfield Oil Corp., which has an 80,000-bbl. refinery at Watson, Calif., which, in effect, gives Cities Service national representation in refining and marketing operations.

Cities Service of Delaware maintains headquarters at Bartlesville, Okla., where H. W. Camp is manager of refinery operations and W. W. Scheumann is general superintendent.

Key men in charge of the East Chicago plant are: E. H. Roy, superintendent; J. D. Snakenberg, assistant superintendent, and L. E. Taylor, cracking superintendent.

At Ponca City, L. H. Haugen is superintendent; D. V. Eels, assistant superintendent; R. S. Ross, cracking superintendent, and E. F. Sonders, lube plant superintendent. C. O. Bailey is superintendent at the Okmulgee plant which is now shut down.

Cities Service of Pennsylvania, headed by T. W. Tutwiler, president, is domiciled at 70 Pine Street, New York. L. M. Bound is general superintendent and J. D. Morgan is vice president and manager of the research and development department.

H. M. Harmon is superintendent of the Braintree, Mass., refinery and T. G. Gray is assistant. At Linden, N. J., D. P. Sturgis is superintendent and P. I. Tinkler is assistant. The same respective positions are held at the Petty's Island refinery by E. M. Keely and D. J. Haney. The Titusville, Pa., plant is under supervision of C. E. Kinder and A. F. Anderson, assistant.

●

Photomicroscopy Shows New Data on Salt in Crude Oil

WASHINGTON, D. C.—Photomicroscopy—making pictures with a combination camera and microscope—has been employed successfully by Bureau of Mines chemists to identify and study brine droplets and salt crystals in crude petroleum which often interfere with the refining process.

Chemical analysis heretofore has been the ordinary method of determining the physical form and behavior of the various salts in crude oil, but the bureau's studies now make it possible actually to see the minute impurities which "constitute a major problem in the petroleum industry's refining operations."

With the aid of the petrographic microscope and camera, bureau scientists were able to prove that magnifications ranging from 100 to 500 diameters were necessary to see the natural shape, size, character, and behavior of the emulsion droplets and salt crystals in oil.

As a result of the studies, a number of facts pertinent to refining problems were discovered and described. For example, with the microscope it was possible to see the effect of emulsion-breaking chemicals and to watch crystals of salt form in the brine droplets. Furthermore, the observers were able to find salt crystals that were encased by wax and other gummy substances in petroleum, to identify the salt crystal by its optical and crystal properties, and to study the behavior of these crystals in the residual oils during refining.

All of the photomicroscopic work of the investigators was checked by chemical analysis, the report commented, in order to verify the accuracy of the method and to add to the information revealed by the microscope.

Detailed descriptions of the microscopic phenomena, together with photomicrographs of droplets and crystals, are contained in Technical Paper 638, "Photomicroscopy of Salt in Petroleum," by Lloyd F. Christianson and J. W. Horne, which may be obtained from the Superintendent of Documents, Washington, D. C., for 25 cents.

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4 and 5. Same type. Each blade coated with 1½ lbs. of COLMONOY. In constant use for over a year, and still going strong.

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COLMONOY is playing an important part in oil production and refining operations in the United States. Pump sleeves, plungers, rings, wash pipes and many other kinds of equipment used in the oil industry are particularly subject to excessive corrosion and abrasion.

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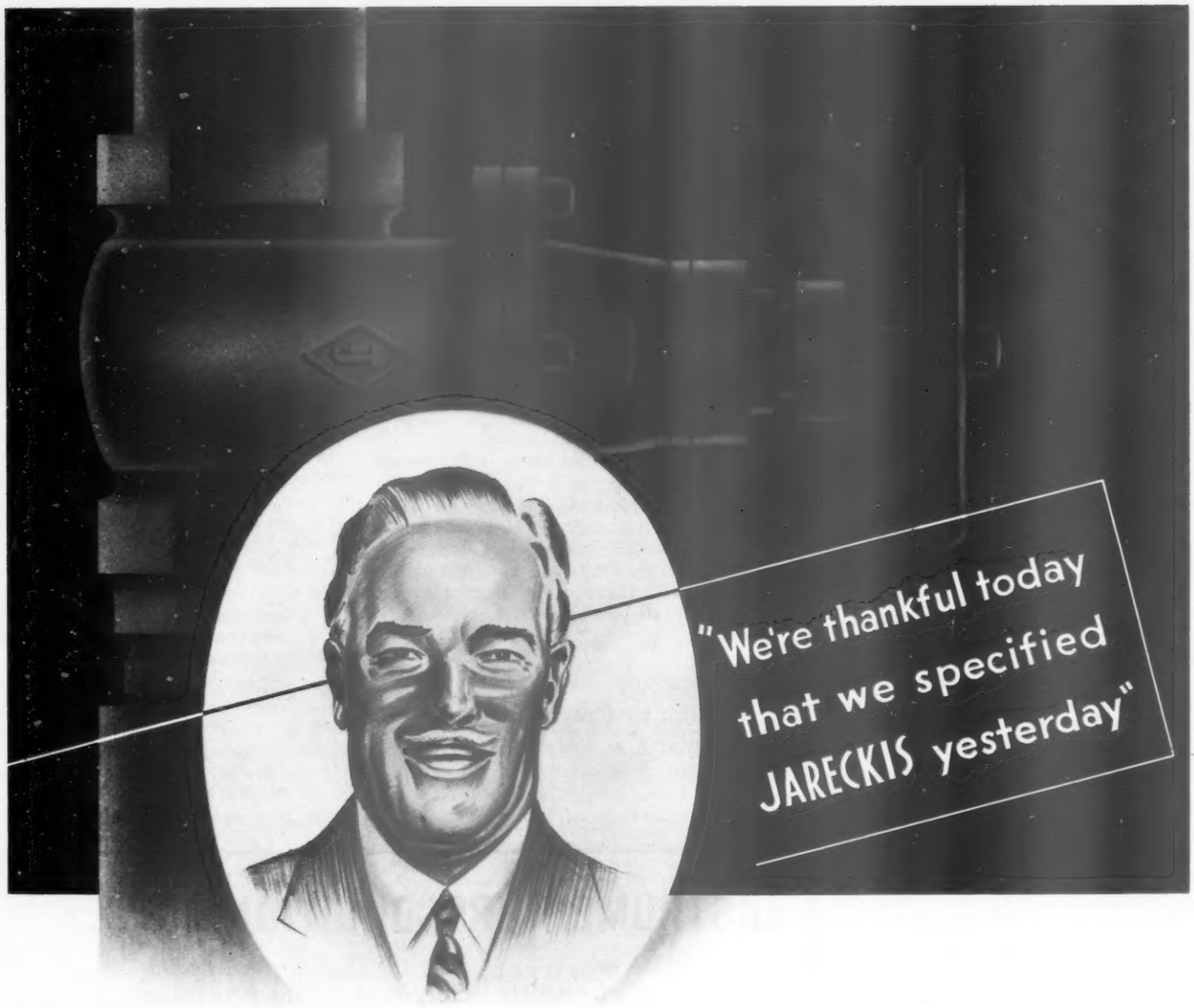

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The summary of operations for June, presented on the next page, shows that drilling last month was about half as active as in June 1941. This week's report suggests that July's drilling will fall considerably below 50 per cent of last year's activity. Last week there were only 305 completions, of which 170 were oil wells or 35 per cent of the number completed during the corresponding week of last year.

Four areas show signs of increasing activity for various reasons: Illinois, where production is declining slowly but steadily; California, where more heavy oil is required; Slaughter, where a large lease has been confirmed by the courts, and Andrews County, Texas, where a major field is in the making. In two of these areas, the oil is urgently required and is near transportation facilities and markets. In the two West Texas areas, the oil is not needed but lease requirements must be met and the spacing normally followed is the 40-acre spacing required by M-68.

Any relief to Illinois' production decline afforded by increased drilling would seem merely to promise a deceleration of the decline. In the light of the trend of production which is now apparent, the industry faces two major problems in connection with getting the oil to market. The first is to get oil from the east-central states to the Atlantic seaboard and the other is to insure a supply to the western end of this system. These objectives must, of course, be obtained with the use of a minimum of steel, and it may be considered that in meeting the demands of a dislocated system during the war, the postwar requirements should also be borne in mind. The Government's estimate of reserves, which confirms The Oil and Gas Journal's totals in a very gratifying manner, indicates that getting oil into the east-central states will be a major problem after the war when normal tanker movement to the East Coast can be resumed. The retardation of development drilling in areas where it would result only in a further decline in allowables which are now too small and reorganization of transportation facilities which will serve these areas promises a minimum of readjustment in the postwar period. In the meantime, development of flush fields on a wide spacing will lessen fears of shortage in the near future.

LOUISIANA GULF COAST: Tests are under way in an attempt to locate oil on the Hayes gas-distillate structure. A new deep sand showing oil has been found on the northwest flank of Anse La Butte (p. 61).

CALIFORNIA: The Wheatville discovery well has been completed and its position on the Helm-Riverdale trend suggests the likelihood of another field to the southeast. Conversion of a gas pipe line from the San Joaquin Valley to San Francisco has caused the further development of the northern gas fields. Exceptions to operators in the Wilmington field are permitting the drilling of a number of wells to the upper pays. Santa Maria Valley is also becoming active owing to the demand for heavy crude (p. 65).

SOUTHWEST TEXAS: The Petronilla field, Nueces County, has been extended so as to link with North Luby, although in a deeper pay than those in the latter field. De Witt County's Wilcox test near Yorktown showed gas distillate in the 8,300-ft. pay and higher showings will be tested (p. 56).

NORTH TEXAS: The Turner area, Montague County, may be extended 1 mile by Continental's well which has reported two showings but is drilling deeper. A pool opener southwest of Nocona may prove to be an extension to the Clingingsmith area (p. 68).

OKLAHOMA: A new pool has been opened on the Granite ridge between Crescent and Navina. Pay is in the Layton. Hunton production has been found midway between Brooksville and West Hotulke in Pottawatomie County. Another large gas well was brought in in the Chickasha field (p. 59).

KANSAS: Arbuckle production has opened the Hazel pool 2 miles west of Drach, in northern Stafford County. Smyres is extended to the north, south and west (p. 64).

WEST TEXAS: A new pool northwest of Slaughter may eventually prove to be a major extension to that field. Andrews County is booming with 17 new locations in 15 sections in the southwestern sector. Record production for the Sand Hills Ordovician area is reported by Gulf from their 41 Waddell (p. 56).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended July 18, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	42	13	6	61	131,564	1,991	3,001
Ohio	8	11	5	24	55,920	569	901
Indiana	4	0	1	5	9,011	199	266
Kentucky	0	1	1	2	4,218	181	391
Illinois	14	0	15	29	70,141	926	1,864
Michigan	4	2	6	12	32,152	387	467
Kansas	19	3	18	40	134,008	844	1,094
Nebraska	0	0	1	1	1,822	22	51
Missouri, Iowa	0	0	0	0	0	9	13
Oklahoma	13	2	13	28	109,919	717	883
Texas:							
North Central Texas	9	0	4	13	45,799	679	1,602
West Texas	13	0	5	18	76,722	865	1,154
Texas Panhandle	3	0	0	3	8,747	237	303
East Texas	6	1	3	10	49,995	223	616
Texas Gulf Coast	1	2	2	5	29,317	441	586
Southwest Texas	4	1	4	9	52,922	706	975
Total Texas	36	4	18	58	263,502	3,151	5,236
North Louisiana	9	0	2	11	54,145	275	344
Louisiana Gulf Coast	7	1	3	11	104,915	308	492
Total Louisiana	16	1	5	22	159,060	583	836
Arkansas	3	0	1	4	10,151	84	103
Mississippi and Southeast	0	0	0	0	0	45	146
Montana	1	0	0	1	1,700	91	134
Wyoming	2	0	0	2	5,981	53	75
Colorado, Utah	0	1	0	1	4,006	9	22
New Mexico	3	1	3	7	19,650	159	260
California	5	0	3	8	42,958	427	587
Total United States	170	39	96	305	1,055,763	10,447	16,330
Total previous week	169	44	127	340			
Week ended July 19, 1941	481	71	135	687			

ILLINOIS: New pools are in prospect south of Rural Hill and Bible Grove and three prospective pool openers are testing in Wayne County (p. 54).

UTAH: The Cisco gas field in Grand County has been unitized for reopening of the pay horizon and for deeper testing (p. 62).

ALBERTA: What appears to be the largest producer in Canada outside of Turner Valley lies 2 miles south and east of the old Taber development (p. 69).

WEST CENTRAL TEXAS: Wimberley is extended to the north (p. 68).

COLORADO: The Wasatch gas horizon at Powder Wash was extended ½ mile northeast (p. 62).

EAST TEXAS: Three wells have reached the Paluxy pay zone in the new Black Oak field and three more are under way. Club Lake has two wells testing and two others starting (p. 63).

ARKANSAS: Porosity has been found in the Smackover lime in a deep test near Lisbon. Tokio production has also been found west of the old East El Dorado area (p. 67).

TEXAS GULF COAST: After many years of testing, a small gas well was completed on the Shepherds Mott area, Matagorda County. A test between Mayo and West Ganado, Jackson County, made dry gas. North La Ward may be extended 1 mile in a new deeper pay (p. 60).

Basin Operators Hope for More Relief From M-68 Restrictions

MATTOON, Ill. — The battle over Order M-68 and whether it should apply to operations in the Illinois basin overshadowed all Illinois oil developments during the past week.

As the Senate prepared to consider a bill to which Senator Lucas of Illinois had attached an amendment prohibiting the Office of Petroleum Coordinator from restricting the drilling of shallow oil wells, Mr. Lucas announced he had withdrawn the amendment since it appeared the restrictions insofar as they affected Illinois fields might be eased without legislation.

It was also learned that Petroleum Coordiator Ickes had announced that a survey would be made to determine whether drilling of more oil wells would be permitted in the Illinois fields. "If the facts disclose further exceptions to M-68 are justified, and probably some more should be made," he said, "then such exceptions will be made."

Allen K. Swann, Evansville, Ind., representing the Tri-State Petroleum Association, said an order was expected in less than 2 weeks that would open Illinois fields to 10-acre sand and 20-acre lime development.

New Pool Opened South Of Rural Hill Field

In its most recent test Ohio Oil Co. 1 M. C. Moore, NE SE NW 35-6s-5e, pumped 79 bbl. of oil and 30 bbl. of water in 22 hours. It is producing from the Aux Vases sand at 3,296-3,301 ft. and opens a new Hamilton County pool 2 miles south of the Rural Hill field. On a previous test the 1 Moore swabbed 102 bbl. of oil and 25 bbl. of water after being deepened 5 ft. to 3,315 ft. There is a possibility the well will be drilled still deeper.

Kingwood Oil Co. 1 Essen, 20-5n-7e, a Clay County wildcat at the edge of the village of Bible Grove and 2 miles south of the Bible Grove field, recovered 120 ft. of oil and 250 ft. of oily mud in a 1-hour drill-stem test of the Aux Vases sand at 2,745-60 ft. However, the test is being taken on to the McClosky and is drilling below 2,830 ft. after topping the Ste. Genevieve at 2,798 ft.

Three Prospective Pool Openers in Wayne County

H. H. Weinert 1 J. R. Crews, SE SE 28-1s-8e, a wildcat 2 miles northeast of Fairfield, was scheduled to begin a production test of the Rosiclare at 3,250-70 ft. The well flowed on a drill-stem test of this formation. No. 1 Crews, a Pure farmout, is in the midst of a large Pure block.

Another well scheduled to begin production test is Pure Oil Co. 1 Pike, NW NW 13-1s-7e, where casing has been set to the Aux Vases sand topped at 3,065 ft. On a 1-hour drill-stem test the Aux Vases yielded 1,920 ft. of oil.

Shell Oil Co., Inc.'s closely watched 1 Rutger, in the Cisne area, recovered 120 ft. of oily mud on an hour's drill-stem test of the Aux Vases sand at 3,048-67 ft. and is coring ahead. It is in the E½ NE NE 17-1n-1e.

ILLINOIS COMPLETIONS

Wildcats

Bond County: W. C. McBride 1 Butler, SE NE SW 31-4n-2w, dry at 1,314 ft., Golconda 886 ft., Cypress sand 1,019 ft., Benoist 1,117 ft., Benoist sand 1,129 ft., Aux Vases 1,166 ft., Ste. Genevieve 1,232 ft.

J. W. Reynolds 1 Dresser, NW SE NE 21-6n-4w abandoned at 20 ft.

Clay County: Tom Pruitt et al 1 Smith, SE NW 11-3n-7e, dry at 2,960 ft., Kincaid 2,020 ft., Clore 2,130 ft., Menard 2,202 ft., Tar Springs 2,328 ft., Glen Dean 2,389 ft., Hardinsburg 2,426 ft., Golconda 2,482 ft., Barlow 2,562 ft., Paint Creek 2,735 ft., Benoist 2,787 ft., Renault 2,822 ft., Aux Vases 2,858 ft., McClosky 2,942 ft.

J. Hal Jones 1 Patton, NE NW 11-3n-7e, dry at 2,952 ft., Glen Dean 2,414 ft., Golconda 2,483 ft., Barlow 2,568 ft., Cypress 2,580 ft., Weiler 2,606 ft., McClosky 2,948 ft.

Delta Prod. 1 H. Muhs, NW NE SE 15-4n-8e, dry at 3,150 ft., Menard 2,256 ft., Tar Springs 2,334 ft., Glen Dean 2,475 ft., Hardinsburg sand 2,501 ft., Golconda 2,557 ft., Barlow 2,640 ft., Cypress sand 2,678 ft., Weiler 2,717 ft., Paint Creek 2,855 ft., Benoist 2,865 ft., Renault 2,942 ft., Aux Vases 2,952 ft., Ste. Genevieve 2,994 ft., Fredonia 3,034 ft., St. Louis 3,149 ft.

Clinton County: William Murphy 1 Bank, NW SW SE 21-3n-3w, dry at 1,146 ft., base Pennsylvanian 920 ft., Golconda 920 ft., Aux Vases 1,143 ft.

Gallatin County: Sohio Prod. 1 Natural Resources, NE SE NW 28-8s-10e, dry at 2,788 ft., base Pennsylvanian 1,610 ft., Kincaid 1,690 ft., Degonia 1,718 ft., Palestine 1,883 ft., Menard 1,900 ft., Waltersburg 2,000 ft., Vienna 2,054 ft., Tar Springs 2,070 ft., Glen Dean 2,156 ft., Golconda 2,303 ft., Barlow 2,421 ft., Cypress 2,444 ft., Benoist 2,542 ft., Renault 2,629 ft., Aux Vases 2,744 ft.

McDonough County: H. J. Hensley 1 Bushnell, NW NE SW 30-5n-4w, dry at 851 ft., Ste. Genevieve 125 ft., Trenton 750 ft.

Montgomery County: A. M. Lacey 1 P. Young, SW SW SW 15-9n-4w, dry at 644 ft.

Putnam County: C. O. Weir 1 Kumme, SW NW NW 3-31n-1w, dry at 723 ft.

White County: Nash Redwine 1 Backman, SW SW SW 9-5s-9e, dry at 3,404 ft., base Pennsylvanian 2,048 ft., Kincaid 2,158 ft., Menard 2,416 ft., Vienna 2,524 ft., Tar Springs 2,543 ft., Glen Dean 2,660 ft., Hardinsburg 2,728 ft., Golconda 2,752 ft., Cypress 2,907 ft., Weiler 2,913 ft., Renault 3,126 ft., Aux Vases 3,204 ft., Ste. Genevieve 3,219 ft.

Pure 1-A Combe, NE NW NW 5-6s-10e, dry at 3,195 ft., Kincaid 1,902 ft., Degonia 1,986 ft., Clore 2,012 ft., Palestine 2,083 ft., Menard 2,232 ft., Waltersburg 2,332 ft., Glen Dean 2,428 ft., Golconda 2,595 ft., Barlow 2,710 ft., Cypress 2,764 ft., Weiler 2,778 ft., Paint Creek 2,880 ft., Aux Vases 3,007 ft., Rosiclare 3,087 ft., McClosky 3,105 ft.

N. E. Marshall 1 Norris City Bank, NW NW NW 32-6s-9e, dry at 3,265 ft., base Pennsylvanian 2,210 ft., Menard 2,248 ft., Waltersburg 2,380 ft., Tar Springs 2,483 ft., Glen Dean 2,537 ft., Golconda 2,645 ft., Barlow 2,774 ft., Cypress 2,792 ft., Benoist 2,962 ft., Renault 3,002 ft., Ste. Genevieve 3,094 ft., McClosky 3,149 ft.

Fields

Bible Grove, Clay County: Texas 2 W. Landwehr, NW NW NW 9-5n-7e, dry at 2,840 ft., Glen Dean 2,306 ft., Golconda 2,368 ft., Cypress 2,473 ft., Weiler 2,487 ft., Paint Creek 2,626 ft., Benoist 2,639 ft., Renault 2,702 ft., Aux Vases 2,707 ft., Ste. Genevieve 2,780 ft., Rosiclare 2,795 ft., Fredonia 2,805 ft., McClosky 2,824 ft.

Clay City, Wayne County: Pure 2-B Obrecht, NE NW 22-2n-8e, pumped 112 bbl., perf. 2,640-60 ft., Weiler 2,650-60 ft., T.D. 3,057 ft., P.B. 2,675 ft.

Dundas, Jasper County: Pure 1-B H. Wartsbough, SW SE 6-5n-10e, pumped 135 bbl., 5,000 gal. acid, McClosky 2,854-58 ft., 2,867-70 ft., T.D. 2,910 ft.

(Continued on Page 57)

Gradual Drilling Decline Continued Through June

COMPLETIONS reported in June showed a continuation of the drop in drilling activity as this year's field development may be considered reported, of which 1,871 were oil wells, so that 1,309 wells were drilled, 112 fewer than in May. to be at 39 per cent of last year's rate. Gas wells Since 120 fewer oil wells were completed, it fol-show a smaller proportionate decline, namely 64 lows that the decline in activity is limited largely or 29 per cent, while dry holes have dropped only to field development. Gas wells showed an in- 105, or 20 per cent from last year's level. crease of seven during the month and there was Drilling wells, which include a number of shut-one more dry hole reported. downs, show a slight improvement, there being

Drilling activity is now less than half that of 2,386 operations reported. This compares with last year. In June 1941 2,625 completions were 4,178 on July 1, 1941, a decrease of 43 per cent.

SUMMARY OF OPERATIONS, ALL FIELDS, JUNE

	Comp.	Oil	Prod.	Gas	Dry	Completions: Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Footage	Drlg.
Appalachian	285	198	495	64	23	8	230	26	21	0	585,340	297
Ohio	85	16	854	42	27	15	17	53	0	0	219,736	219
Indiana	21	3	215	2	16	6	15	0	0	0	30,897	160
Kentucky	14	2	30	10	2	0	6	8	0	0	31,290	66
Michigan	65	27	7,934	8	30	0	33	31	1	0	166,610	120
Illinois	141	68	10,425	1	72	8	23	110	0	0	363,420	136
Kansas	126	72	46,276	7	47	0	14	110	2	0	414,766	236
Nebraska	2	1	50	0	1	0	1	1	0	0	5,268	15
Missouri, Iowa	0	0	0	0	0	0	0	0	0	0	0	2
Oklahoma	85	43	12,715	2	40	2	25	43	15	0	296,212	203
North Texas	53	21	15,216	0	32	5	18	20	10	0	171,453	68
West Central Texas	29	11	845	3	15	5	11	13	0	0	64,791	33
Northern West Texas	43	40	32,448	0	3	0	1	17	25	0	203,137	51
Southern West Texas	35	22	19,655	1	12	1	11	17	6	0	133,832	49
Texas Panhandle	16	12	1,789	4	0	0	1	15	0	0	47,801	21
East Texas	16	11	2,206	0	5	0	0	9	7	0	80,067	18
Upper Gulf Coast	56	37	6,349	5	14	0	1	7	45	3	382,088	102
Lower Gulf Coast	29	13	1,750	1	15	1	0	1	27	0	182,729	53
South Central Texas	3	0	0	0	3	0	2	1	0	0	6,510	9
South Texas	30	15	1,209	0	15	0	4	21	5	0	101,163	17
Southeast New Mexico	12	10	993	0	2	1	2	9	0	0	36,050	62
Arkansas	13	11	2,818	0	2	0	1	5	7	0	70,372	40
North Louisiana	30	20	7,291	0	10	0	2	8	20	0	141,673	63
Louisiana Gulf	34	21	4,835	1	12	0	0	2	16	16	304,708	83
Mississippi	3	0	0	0	3	0	0	0	3	0	19,885	9
Alabama, Florida	0	0	0	0	0	0	0	0	0	0	0	8
Montana	11	8	1,098	1	2	1	2	8	0	0	28,107	69
Wyoming	5	5	1,784	0	0	1	1	3	0	0	12,224	68
Colorado, Utah	1	1	440	0	0	0	0	0	1	0	7,198	1
Northwest New Mexico	2	1	120	0	1	1	1	0	0	0	2,697	13
California	64	37	15,196	5	22	7	23	14	19	1	254,154	96
Total June	1,309	726	195,036	157	426	62	445	552	230	20	4,089,943	2,386
Total May	1,421	846	228,233	150	425	82	450	596	262	31	4,843,100	2,339
Difference	112	120	33,197	7	1	20	5	44	32	11	753,157	47

Test Near Evansville Finds Thin Waltersburg Pay

EVANSVILLE, Ind.—In Vanderburg County George E. Nelson and United Oil Co. 1 P. Stader, NE SE NW 32-6s-11w, pumped 46 bbl. of oil in a 24-hour test last week, operators reported. No. 1 Stader, a wildcat about 2 miles southwest of Evansville, is producing from 2 ft. of Waltersburg sand saturation at 1,785-87 ft. and has not been shot. The 46-bbl. gage is the best reported since production tests started.

Longhorn Oil Corp.'s test on Greathouse Island in the Wabash River, 1 Greathouse, NW SE SE 11-7s-15w, Posey County, was drilling at 2,750 ft. at the end of the week.

Meanwhile, a southwest outpost of the Mount Vernon field of Posey County, Carter and Gulf 1 John C. Black, NE SE 11-7s-14w, was drilling below surface casing.

INDIANA COMPLETIONS

Gibson County: Kirk D. Holland 1 Horrell, S½ Don. 96-1n-10w, pumped 20 bbl., McClosky 1,829-32 ft., T.D. 1,834 ft., acid.

R. L. Brown 1 Ross, 660 ft. S line, 660 ft. E line Don. 27-1s-10w, dry, T.D. 200 ft.

Continental Oil 54 Maier, SW cor. 31-2s-13w, pumped 213 bbl., Cypress 2,469 ft., T.D. 2,492 ft.

Continental Oil 7 Cooper, NE NW SE 12-3s-14w, pumped 82 bbl., Cypress 2,512 ft., T.D. 2,534 ft.

Posey County: J. Lindas 1 Spencer, SW cor. 13-7s-13w, pumped 8 bbl., pay 1,938-51 ft.

OHIO

ZANESVILLE, Ohio.—The test north of Gaysport in Muskingum County, produced oil from the Medina. Coshocton County and the Clayton pool yielded fair oil wells in the Clinton.

The Oriskany test in northwest Guernsey County was completed for 1,400,000 cu. ft. of gas.

SOUTHEAST OHIO COMPLETIONS

Ashland County, Mohican Township: Glen Harmon et al 1 Clark Alber, Sec. 34, dry, Clinton, T.D. 3,100 ft.

Troy Township: Williams Bros. 1 Fannie Smith, Lot 46, dry, Clinton sand absent, T.D. 2,645 ft.

Athens County, Lodi Township: C. J. Ross 1 Charles A. Colburn, Sec. 13, 1 bbl., not shot, first Cow Run, T.D. 537 ft.

Carthage Township: H. B. Walker & Co. 1 Herman Taylor, SW Sec. 33, 90,000 cu. ft. gas and ½ bbl., second Berea, T.D. 1,805 ft.

Ohio Fuel Gas Co. 1 William H. Shee, Sec. 34, near Guysville, 3 bbl., first Berea, T.D. 1,704 ft.

Belmont County, Union Township: Frank Stranges 1 C. C. Shepherd, Sec. 21, dry, Berea, T.D. 1,770 ft.

Coshocton County, Pike Township: Dunman Oil Co. 1 J. R. McKee, Sec. 23, 40 bbl., shot, Clinton 3,201-50 ft., T.D. 3,256 ft.

Guernsey County, Wheeling Township: Ohio Fuel 1 John Ingram, Sec. 21, 1,440,000 cu. ft. gas, shot, Oriskany 3,217-28 ft., T.D. 3,229 ft.

Knox County, Monroe Township: Upham Gas 1 A. B. Shiveley, Lot 2, 800,000 cu. ft. gas, Clinton, T.D. 2,404 ft.

Lorain County, Ridgeville Township: Ohio Fuel 1 Andrew Nieding, Lot 12, dry, Clinton, T.D. 2,683 ft.

Medina County, Hinckley Township: William Dempsey et al 1 Fred Ritz, SW Lot 55, 50 bbl. and 750,000 cu. ft. gas, Little lime, T.D. 3,232 ft.

Meigs County, Bedford Township: Ohio Fuel Gas Co. 1 William A. King, Sec. 26, 50,000 cu. ft. gas, second Berea, T.D. 1,542 ft.

Monroe County, Washington Township: Quarry Oil & Gas Co. 1 Platt Bros., NW Sec. 23, 62,000 cu. ft. gas, Berea grit, T.D. 2,090 ft.

Morgan County, Marion Township: Bern Oil & Gas 2 Nan Bowman, Sec. 16, dry, Brill (water), T.D. 987 ft.

Muskingum County, Blue Rock Township: Atha Oil Account 1 H. D. Bell, NW Sec. 17, 25 bbl. after shot, Medina, T.D. 4,198 ft.

Salt Creek Township: Ohio Fuel Gas Co. 1 H. D. Lewis et al, NE Sec. 8, 115,000 cu. ft. gas, Clinton sand, T.D. 4,192 ft.

Noble County, Elk Township: G. C. Hendershot et al 1 Kehl, Sec. 24, 40,000 cu. ft. gas, Germantown sand, T.D. 1,344 ft.

Perry County, Clayton Township: Preston Oil 5 Margaret Shaw, Sec. 8, 45 bbl., shot, Clinton 3,259-95 ft., T.D. 3,311 ft.

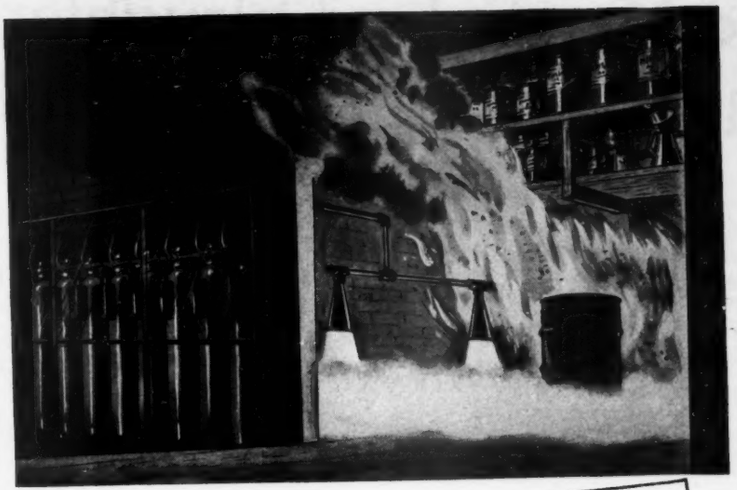
Clayton Township: Preston Oil Co. 2 Joseph A. Wilson, SW Sec. 6, 65 bbl. and 100,000 cu. ft. gas, Clinton sand, T.D. 3,270 ft.

Washington County, Liberty Township: Graham Oil Co. 1 Charles Schenkle, Sec. 4 on Boston Run, 69,000 cu. ft. gas, lime, T.D. 1,640 ft.

Barlow Township: Anderson et al 1 William Fleming, Sec. 5, 75,000 cu. ft. gas, Injun, T.D. 1,569 ft.

Grandview Township: Charles Alloway et al 1 Noah

(Continued on Page 61)



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PERMIAN BASIN, PANHANDLE

Find May Extend Slaughter Field Three Miles Northwest

By ROBERT INGRAM

MIDLAND, Tex.—Another new pool northwest of the big Slaughter area was opened last week—one which may eventually prove to be a major extension to that field. The discovery well was Sunray Oil Co. (originally J. T. O'Neal of Lubbock) 1 Dela Slaughter Wright, NW SE Labor 14, League 61, Martin C.S.L. Survey. It pumped 237.38 bbl. of 20-gravity oil plus 12 per cent water in 24 hours after acid treatment from pay at 4,848-4,950 ft. Gas-oil ratio was 210:1.

The well topped the lime section at 4,810 ft., was drilled to 4,998 ft. and then plugged back to 4,975 ft.; 5½-in. casing, cemented at 4,989 ft., was perforated at 4,848-74 ft. and at 4,928-50 ft.

Location of the well is 3 miles northwest of Bieg Oil Co. 1 D. S. Wright, a discovery completed early this year on the southeast outskirts of Whiteface, which is generally considered an extension to the Duggan sector of Slaughter, 1½ miles northwest.

Meantime, preliminary arrangements were being completed for a drilling campaign on the Mallett Land & Cattle Co. ranch in the Slaughter pool which has been delayed by a court contest over the leases. With the leases recently upheld by the state Supreme Court, Jerry C. Hawkins of Tyler filed with the Railroad Commission notice of intention to drill 116 wells in the Edwards C.S.L. Survey in southeastern Cochran and southwestern Hockley counties.

The majority of the acreage is in Hockley County, and all is in the north central part of the field. At least 30 per cent is considered proved, and the balance ranges from semiproven to wildcat acreage. Plans for development call for continuous operation of five rigs over a period of about 3 years, all contract operations.

While these developments assured continued activity in the area, there was no indication that the rate of drilling would approach that of last winter when some 70 wells were being completed each month. Declining market for West Texas oil was largely responsible for a steady decline in the drilling rate at Slaughter which dropped to 22 wells in June.

West Andrews Campaign Continues

Phillips Petroleum Co. staked locations for 17 more tests in southwestern Andrews County in and near the Embar and West Andrews pools. The new tests will complete a pattern to blanket the area between the two pools for Permian production, and are expected to prove some 15 sections. They will be Nos. 20 to 36, inclusive.

Meantime, three tests drilling in the southern Embar sector, where Phillips completed its discovery well in the Ordovician, were attempting to extend the deeper pay. They were Phillips 3 University-Andrews, NE NW Section 31, Block 10, drilling below 7,435 ft.; Phillips 4 University-Andrews, SE NW Section 30, Block 10, drilling below 7,066 ft., and Stanolind 1-W University, Section 19, Block 10, drilling below 2,781 ft.

NORTHERN WEST TEXAS COMPLETIONS

Wildcats

Lamb County: Stanolind 1 J. W. Hopping, SE SW Sec. 25, Blk. T, T. A. Thompson Sur., ½ mi. E of Fieldton, elev. 3,561 ft., dry, anhydrite 1,535 ft., salt 1,720 ft.. San Andres 3,000 ft., Mississippian 9,060 ft., Ellenburger 9,455 ft., granite 9,600 ft.. T.D. 9,624 ft.

Fields

Sharon Ridge, Mitchell County: F. W. Merrick 5 Mills, NE NW Sec. 18, C. H. McGinnis Sur., elev. 2,176 ft., pumped 91 bbl. after shot, pay 1,555 ft., T.D. 1,710 ft.

Slaughter, Hockley County: De Kalb Agricultural Association 2 Alexander, SE NE Sec. 7, Blk. X, P.S.L. Sur., elev. 3,539 ft., flowed 1,463 bbl. through casing after acid, pay 4,995 ft., T.D. 5,027 ft.

Honolulu 14-A Mallett, NE NE Lab. 11, Lge. 52, Scurry C.S.L. Sur., elev. 3,577 ft., flowed 200 bbl. through tubing after acid, pay 4,958 ft., T.D. 5,038 ft., P.B. 5,014 ft.

Honolulu 40-B Slaughter, SE SE Lab. 51, Lge. 37, Zavalla C.S.L. Sur., elev. 3,515 ft., flowed 1,478 bbl. through 2½-in. casing after acid, pay 4,895 ft., T.D. 4,890 ft.

Slaughter, Terry County: De Kalb Agricultural Association 6 Alexander, SW SE Sec. 7, Blk. X, P.S.L. Sur., elev. 3,548 ft., dry, T.D. 5,063 ft.

Wasson, Yoakum County: American Liberty and Atlantic 9 Knight, NE NE Sec. 773, Blk. D, J. H. Gibson Sur,, elev. 3,703 ft., ⅜-in. tubing choke after acid, pay 4,960 ft., T.D. 5,283 ft.

Belfort Oil 1 E. P. Stanford, NE NW Sec. 836, Blk. 3, J. H. Gibson Sur., elev. 3,672 ft., flowed 480 bbl. through ½-in. tubing choke after acid, pay 4,960 ft., T.D. 5,160 ft.

West Andrews, Andrews County: Stanolind 1-V University, SW NE Sec. 2, Blk. 11, University Sur., elev. 3,311 ft., pumped 35 bbl. oil and 14 bbl. water after shot, anhydrite 1,490 ft., Yates frosted grains 2,870 ft., San Andres 4,210 ft., pay 4,300 ft., T.D. 4,437 ft., *extends pool ½ mi. north.*

Largest Producer in Sand Hills Ordovician Pool Completed

Record initial potential for the Sand Hills Ordovician pool of southwestern Crane County was made last week by Gulf Oil Corp. 41 Waddell, Section 17, Block 3, H.&T.C. Survey, extending production in the southern part of the area ¼ mile east. The well rated a potential of 14,937 bbl. of 39.1-gravity oil daily with gas volume of 62,406,786 cu. ft., a gas-oil ratio of 4,178:1, flowing through tubing and casing and three 4-in. flow lines and three separators.

The Ellenburger had been topped at 5,515 ft., and the well drilled to 5,655 ft., total depth, in dolomite. It was treated with 5,000 gal. of acid.

Previous largest initial potential in the pool was held by the Gulf 4-B Tubb, in the link area of the Ordovician pool. That well flowed at the rate of 14,457 bbl. a day. The new record holder is 1¾ miles south and slightly east of the 4-B Tubb.

Northwest of the Sand Hills area, in northeastern Ward County, Shell Oil Co. announced a new test near its Ordovician discovery near Monahans, also rumored to have made an unusually large initial. Shell staked 2 Sealy-Smith, 2,310 ft. from the north line and 1,650 ft. from the east line of Section 38, Block A, G.&M.M.B.&A. Survey, approximately ¼ mile northwest of the No. 1 deep discovery.

The new operation, however, will not seek the 10,000-ft. Ellenburger pay, but is contracted to 6,000 ft., where it is expected to test the Tubb pay section that returned about 275 ft. of oil-stained lime from the No. 1. Complete information on the No. 1 has been withheld since May, when it was announced that the Ellenburger pay was topped at 10,082 ft. The well was deepened, and total depth now is reportedly around 10,500 ft. There have also been persistent rumors that it has been making better than 700 bbl. an hour of high-gravity oil on tests.

Shell also announced location for an 8,500-ft. Ordovician wildcat in east central Winkler County, some 15 miles north of the Monahans area. This will be Shell 1 M. H. Blue et al, SE NW NW Section 15, Block 46, Township 1s, T.&P. Survey, less than ½ mile west of the Ector County line. There have been no deep tests in the immediate vicinity, but the results at the Sealy-Smith well prompted this test. If successful, it will extend

(Continued on Page 66)

SOUTHWEST TEXAS

North Luby and Petronilla Fields Joined by Production

By F. L. SINGLETON

CORPUS CHRISTI, Tex.—Linking of the Petronilla and North Luby fields, Nueces County, was further indicated the past week with the completion by Stanolind Oil & Gas Co. of its No. 3 LaPrelle, located 1 mile west of the discovery well of the former field and approximately 1,500 ft. northeast of North Luby production.

Although much closer to North Luby, the new well for the time being is more directly associated with the Petronilla field as its sand, in which casing was perforated at 7,307-11 ft., is the same as that from which the discovery and only well of the latter field is producing. The three wells comprising the North Luby field are in shallower sands, two being in sand at 4,350 ft. and the third at 5,085 ft.

The discovery well (Buescher & Coquat 1 Gillette) of the Petronilla field was completed last September. With casing perforated at 7,308-12 ft., its producing depth is approximately the same as that of the new well. It was drilled on a Stanolind farmout, leaving Stanolind as one of the principal leaseholders in the area. The new producer gaged 120.75 bbl. of 40-gravity oil daily through a ⅛-in. choke. There is no production between it and the discovery well.

Tide Water 1 Gips, 3 miles south of Nordheim and 11 miles southwest of Yorktown, De Witt County, which has shown promise of opening another Wilcox trend field, has been shut in after a series of gas-distillate production tests in sand 8,336-44 ft. where casing was perforated. The large rig with which the test was drilled has been torn down but a smaller workover-type rig will be moved on to test a succession of upper horizons in which showings of oil and gas were encountered.

On latest tests of the 8,300-ft. Wilcox sand the well flowed 60 bbl. of distillate and 1,095,000 cu. ft. of gas daily through ¼-in. and 5/32-in. chokes, gaging 1,950-lb. pressure on the tubing with 2,240-lb. pressure on the casing shut in.

Gravity of the distillate was 59° (corrected). On this test there was no showing of salt water but on previous tests the well flowed varying amounts of water. The well originally was drilled to 8,500 ft., where 5½-in. casing was cemented. Numerous sands from 7,000 ft. to below 8,300 ft. were recorded. Most interesting of the oil-showing sands werr those at 7,023-34 ft., 8,110-31 ft., 8,218-28 ft., and the sand just tested.

Humble Oil & Refining Co. recovered 276 ft. of oil and 544 ft. of salt water in a 20-minute drill-stem test at 6,235-40 ft. in its No. 1 Kastner, wildcat test 9½ miles northwest of Sinton, San Patricio County. The test was made through a $\frac{5}{16}$-in. choke on bottom of the string with a 2-in. valve on top. Although it is probable some kind of a well could have been made in that sand to open another new field, the hole is being deepened for exploration of lower horizons. The well also had another sand showing oil at 6,178-83 ft. but in an attempted drill-stem test the tool seat gave way and the test failed.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Wildcats

Cameron County: Pure and Sal Viejo 8 Newberry, dry, T.D. 5,800 ft.

Fields

Odem, San Patricio County: Seaboard 1-A Smith, dry, T.D. 7,093 ft.

Orange Grove, Jim Wells County: Cities Service 6 Schuenemann, 69 bbl., 9/64-in. choke, perf. casing 5,086-90 ft., T.D. 5,092 ft.

Rooke, San Patricio County: Plymouth 1 Welder, 56 bbl., 5/64-in. choke, perf. casing 7,122-24 ft., T.D. 7,131 ft.

South Caesar, Bee County: Southwood 1 Grissom, dry, T.D. 6,615 ft.

South White Creek, Live Oak County: Stelzig & Clark 1 Miller, dry, T.D. 3,382 ft.

Stratton, Nueces County: Southern Minerals 43 Community, 75 bbl., 3/32-in. choke, perf. casing 6,674-88 ft., T.D. 6,690 ft.

Stratton, Kleberg County: Humble 14 King ranch, 138 bbl., ⅛-in. choke, perf. casing 6,618-23 ft., T.D. 6,633 ft.

LAREDO DISTRICT

Fields

South Campana, McMullen County: Argo 1-K Edrington, 10,000,000 cu. ft. dry gas, perf. casing 2,452-65 ft., T.D. 4,486 ft.

Illinois Fields

(Continued from Page 54)

Roy Powers 2 Harvey, E½ NE SW 7-5n-10e, pumped 146 bbl., 3,000 gal. acid, perf. 2,854-58 ft., 1,000 gal. acid, McClosky 2,854-58 ft., 2,871-75 ft., T.D. 2,897 ft.

Grayville, White County: Yingling 1 N. A. Bretz, SW NW SE 20-3s-14w, pumped 144 bbl. oil and 6 bbl. water, Biehl 1,882-96 ft., T.D. 1,896 ft.

Griffin, Wabash County: Longhorn 31 Helm, SW NW NE 27-3s-14w, pumped 30 bbl., 60-qt. shot 2,758-97 ft., Aux Vases 2,758-97 ft., T.D. 2,951 ft., P.B. 2,800 ft.

Keensburg, Wabash County: Continental 11-A Schultz, SE NW SE 8-2s-13w, pumped 15 bbl. oil and 9 bbl. water, 60-qt. shot 2,577-2,601 ft., perf. 2,577-88 ft., Benoist 2,556 ft., T.D. 2,603 ft.

Mill Shoals, Hamilton County: Magnolia 3 Anna Fyie, SE NW SE 25-3s-7e, dry at 3,442 ft., Glen Dean 2,648 ft., Hardinsburg 2,667 ft., Golconda 2,769 ft., Barlow 2,884 ft., Cypress 2,898 ft., Renault 3,187 ft., Aux Vases sand 3,228 ft., Ste. Genevieve 3,289 ft., Rosiclare 3,321 ft., Fredonia 3,326 ft.

New Harmony, White County: Calstar Pet. 23-B Miller-Ford, SW NE SE 21-4s-14w, pumped 185 bbl., 350-qt. shot 2,825-59 ft., Aux Vases 2,825-43 ft., T.D. 2,859 ft.

Roland, White County: Carter 1 W. C. Hill, SW SW 15-7s-9e, pumped 120 bbl., 20-qt. shot 2,170-76 ft., 2,164 ft., Waltersburg 2,139 ft., T.D. 2,176 ft.

Carter 1 Dailey, NW NE 15-7s-8e, pumped 116 bbl., 10-qt. shot 2,198-2,200 ft., Waltersburg 2,180 ft., Waltersburg sand 2,196-2,201 ft., T.D. 2,201 ft.

Sims, Wayne County: Texas 1 Johnson-Lawrence Comm., W½ NE SW 27-1s-6e, pumped 200 bbl., 3,000 gal. acid, Fredonia 3,147 ft., T.D. 3,193 ft.

Texas 2 W. Johnson, W½ SW SW 27-1s-6e, pumped 120 bbl., 30-qt. shot 2,042-52 ft., perf. 3,110-18 ft., 2,000 gal. acid, Aux Vases pay 3,040-60 ft., McClosky 3,165-72 ft., T.D. 3,181 ft.

South Mason, Effingham County: Luttrell et al 1 See, NW NW NE 34-6n-5e, pumped 68 bbl. oil and 59 bbl. water in 19 hr., 10-qt. shot 2,303-08 ft., Benoist 2,296 ft., T.D. 2,309 ft.

South Sailor Springs, Clay County: W. C. McBride 1 Dickey, SE NW NE 3-3n-7e, pumped 9 bbl. oil and 10 bbl. water, 7-qt. shot 2,602-07 ft., 18-qt. shot 2,600-08 ft., Weller 2,599 ft., T.D. 2,608 ft., P.B. 2,599 ft.

McBride 1 E. Fagan, SE SW NE 3-3n-7e, pumped 30 bbl. oil and 3 bbl. water, natural, Weller 2,600-06 ft., T.D. 2,606 ft.

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APPALACHIAN FIELDS

Old Maryland Test To Be Reopened and Deepened

PITTSBURGH, Pa.—After two tests on the Accident dome in Garrett County, Maryland, failed to run high enough to test the structure, one being bottomed in the Oriskany at about the closing contour, and the second appearing about 100 ft. lower at 6,735 ft., William E. Snee et al are moving to 1 Speicher which was bottomed in 1922 at 5,160 ft. and will reopen the hole which, if in good shape, will be deepened. This test was located 0.6 mile southwest of the town of Accident and about 200 ft. west of the road and started at a surface elevation of 2,385 ft.

In West Virginia, another fair Big lime oil well was completed in the heart of the Elk-Poca Oriskany gas field in Kanawha County, and good gas wells in the Oriskany in Jackson County.

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. topped the Tully lime at 6,023 ft. in 6 Piedmont Coal Co. and is drilling at 6,093 ft.

Armstrong County, Bethel Township: T. W. Phillips 1 John Grantz, 158,000 cu. ft. gas, Tiona sand, T.D. 3,011 ft.

Greene County, Jackson Township: Equitable 2921 W. T. Grove, 134,000 cu. ft. gas, Bayard 3,174-93 ft., T.D. 3,368 ft. This was a recompletion from 3,500 ft.

Monongahela Township: Pittsburgh Steel Co. 3 fee, 1,500,000 cu. ft. gas, Big Injun sand 1,460 ft., gas 1,491 ft., T.D. 1,504 ft. This was deepened from the Dunkard sand.

WEST VIRGINIA

In Meade district, Tyler County, Benedum & Trees resumed drilling after a severe fishing job at 5,990 ft. in the test on the Pearl Broadwater farm, but at 6,034 ft. another gas pocket caused another fishing job which is in progress. This test is not yet in the Lower Devonian. In Grant district, Ritchie County, their test on the L. J. Rinehart farm which is being deepened from the Oriskany to the Newburg is drilling at 6,123 ft., or 284 ft. below the top of the Oriskany. The formation is still lime. In Union district, Pleasants County, these operators are drilling at 3,965 ft. in the test on the W. W. Campbell farm with a show of gas and oil at 3,907-15 ft.

In Steele district, Wood County, Glen W. Roberts is shut down at 4,772 ft. in the Corniferous lime topped at 4,720 ft. in the test on the I. B. Robinson farm and waiting on casing.

In Kanawha County, Columbian Carbon Co. completed 9 Homer C. Jones in Poca district about 4¼ miles northeast of Sissonville in the Big lime, with a record of 415 bbl. the first 24 hours. The Big lime was topped at 1,468 ft. with oil and gas at 1,548-54 ft. and a total depth of 1,560 ft. It has not been acidized. South of this the South Penn Natural Gas Co. is drilling 5 Ray-Salyers and is nearing the Big lime.

Braxton County, Holley district: Hamilton Gas Co. 1 Venia Floyd, dry, elev. 1,167 ft., Big lime 1,792-2,000 ft., T.D. 2,735 ft.

Calhoun County, Center district: Hope 8603 Hunter M. Bennett, 1,032,000 cu. ft. gas, Big Dunkard 1,060-1,115 ft., sand 1,115-1,245 ft., third Salt 1,656-1,865 ft., Big lime 1,900-84 ft., Injun 1,984-2,070 ft., gas 2,036-58 ft., shot 2,036-58 ft., T.D. 2,089 ft.

Sherman district: Connolly & Weaver 1 Clay McDonald, 15 bbl., Injun sand, T.D. 2,021 ft.

McCall Drilling Co. 2 T. S. Cunningham, 10 bbl., Injun sand, T.D. 2,088 ft.

Washington district: Hope 8625 Homer Norman, 267,000 cu. ft. gas, Big lime 2,178-2,271 ft., Big Injun 2,271-77 ft., gas 2,271-77 ft., shot 2,271-87 ft., T.D. 2,377 ft.

Gilmer County, Center district: Carnegie 1 J. A. McDonald. 424,000 cu. ft. gas before shot, Salt sand 1,593-1,748 ft., Blue Monday 1,748-74 ft., gas 1,749-74 ft., T.D. 1,774 ft.

Monongalia County. Clay district: Roy W. Clovis 1 C. H. Harker, 44,200 cu. ft. gas, Pittsburgh coal 789-95 ft., gas sand 1,488 ft., T.D. 1,586 ft.

Putnam County, Curry district: Reishman Oil & Gas Co. 1 Thomas Adkins, 73,000 cu. ft. gas, Berea and shale, Big lime 1,316-1,475 ft., Injun 1,507-44 ft.. Berea 1,983-2,008 ft., Corniferous 4,115-19 ft., T.D. 4,119 ft.

Ritchie County, Murphy district: W. H. Bickel 1 B. F. Welch. drilled deeper, 900,000 cu. ft. gas, Big lime 1,767-1,850 ft., Injun top 1,850 ft., T.D. 1,860 ft.

Roane County, Harper district: B. F. Wright 1 J. K. Bailey, dry, Salt sand 1,751-1,842 ft., T.D. 1,842 ft.

Upshur County, Meade district: Cumberland & Allegheny Gas Co. 321 Rebecca Smallridge, 57,700 cu. ft. gas, Gordon sand 2,131-51 ft., gas 2,135-38 ft., T.D. 4,034 ft.

Wood County, Union district: A. M. Cooper et al 1 David Mellinger heirs, 10 bbl. and 169,000 cu. ft. gas, Berea, T.D. 1,985 ft.

ORISKANY GAS FIELDS

Jackson County, Ravenswood district: West Virginia Gas Corp. and Carnegie 1 H. E. Weekley, 6,166,000 cu. ft. gas, Oriskany 5.263 ft., T.D. 5,270 ft., not shot.

Columbian Carbon Co. 2 J. H. Boggess, 2,363,000 cu. ft. gas, Oriskany 5,117 ft., shot 5,120-5,200 ft., T.D. 5,218 ft.

Ripley district: West Virginia Gas Corp. 1 F. M. Monday, 5,955,000 cu. ft. gas, Oriskany 5,099 ft., not shot, T.D. 5,129 ft.

Godfrey L. Cabot, Inc., 1 G. A. Winters, 411,000 cu. ft. gas after shot, Oriskany 5,097 ft., T.D. 5,182 ft.

Columbian Carbon Co. 1 E. D. Staats, 610,000 cu. ft. gas, Oriskany 5,225-5,319 ft., shot 5,226-91 ft., T.D. 5,333 ft.

(Continued on Page 63)

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ARMCO SPIRAL WELDED PIPE

OKLAHOMA FIELD REPORT

Pool Opened on Granite Ridge Between Navina and Crescent

By CARL HOOT

A SUMMARY of the week's activities in Oklahoma shows three discovery wells bringing in new production, a large gas well in Grady County and a 1,000-bbl. extension well for the new East Watchorn pool. In the Apache field of Caddo County, the Texas Co. reports its first recompletion. Its 3 Smith, SW SE NW 2-5-12w, flowed 211 bbl. in 9 hours with 3,500,000 cu. ft. of gas after being deepened from 3,430 ft. to 3,572 ft., still in the Wilcox.

New Pools in Logan and Pottawatomie Counties

In Logan County another pool was opened along the Nemaha granite ridge, the second discovery in 1942. Midway between Crescent and the Navina pool, the latter opened early in the year, Gulf Oil 1 Pulliam, NE NE 20-16-4w, flowed 58 bbl. of oil a day from Layton sand at 5,220-50 ft. Like most other tests along this structure, the well was drilled to 7,505 ft. in the second Wilcox which was dry and then plugged back to 5,259 ft. Top of Layton sand at Navina was 5,007 ft.

Pottawatomie County yielded two new producers. Small Hunton lime production was found at Mid-Continent 1 Caldwell, NW SE NE 1-8-3, 3 miles east of Brooksville and about 3 miles southwest of West Hotulke. On pumping tests the well made 14 bbl. of oil a day from 4,530-4,674 ft. Total depth was 5,157 ft. Smith Bros. 1 Dawson, a wildcat in NE NE 6-9-3, extended the Centerpoint Simpson dolomite pool 1 mile northeast. Dolomite was topped at 5,545 ft. and perforations from 5,540-58 ft. recovered a bailer of oil and mud but after acid treatment the well made several flows of oil with considerable water. It was completed for 21 bbl. of oil a day.

In the Chickasha gas field of Grady County, which has had little drilling activity reported this year, Little Nick Oil Co. 3 Glover, S½ NE NE 27-5-8w, flowed 223,000,000 cu. ft. of gas from Charleston sand at 3,995-4,198 ft. Total depth was 4,235 ft.

Alma Oil Co. added two good-sized wells to its new East Watchorn pool of Pawnee County, expanding the field north and west. No. 1 Swallow, SW NE NE 26-23-3, flowed 996 bbl. of oil and 2,700,000 cu. ft. of gas from Wilcox sand at 3,895-3,925 ft. It is a west offset to the discovery well. The northwest offset was 1 Oldham, SW cor. 24-23-3, which flowed 700 bbl. of oil a day through choke from sand at 3,878 ft. Top of Wilcox sand in the discovery well was 3,888 ft.

Also in Pawnee County, about 4½ miles west of East Watchorn, McBride 1 Gilbert, SE NE SW 19-23-3, was dry at 4,288 ft. First and second Wilcox sand zones were found at 3,647 ft. and 4,253 ft. Is is a north and west outpost from the old Watchorn area and had attracted considerable interest as a possible revival for that field.

OKLAHOMA COMPLETIONS

Wildcats

Caddo County, NW of Apache: Texas 1 Starr, NE SE NW 34-6-12w, dry, T.D. 4,376 ft., Hunton 2,215 ft., Viola 3,170 ft., sand 4,128 ft.

Caddo, approx. 26 miles N of Apache: Amerada 1 Smith, SE SW 14-10-13w, dry, T.D. 8,000 ft. in Pennsylvania.

Carter County: P. B. Scott 1 Simpson-Fell, SW NE SW 8-5s-1, dry, T.D. 1,785 ft., Arbuckle 1,740-85 ft.

Creek County: Union Oil 1 Brown, SW SE NW 11-19-7, dry, T.D. 8,225 ft., Tonkawa limes 4,480 ft., sand 4,510 ft., Woodford 7,562 ft., Hunton 7,625 ft., Viola 7,930 ft., second Wilcox 8,169 ft.

Logan County, discovery: Gulf 1 Pulliam, NE NE 20-16-4w, flowed 58 bbl., Layton 5,220-50 ft., T.D. 7,505 ft.

Skelly 1 McCormick, NW SE SW 4-16-1w, dry, T.D. 5,700 ft., Layton 4,290 ft., Hunton 5,259 ft., Viola 5,428 ft., dense 5,460 ft., Wilcox 5,590 ft., second Wilcox 5,680 ft.

Pawnee County: W. C. McBride 1 Gilbert, SE NE SW 19-23-3, dry, T.D. 4,288 ft., Oswego 3,340 ft. sand 3,647 ft., Woodford 4,155 ft., Viola 4,186 ft., second Wilcox 4,253 ft.

Pottawatomie County: Mid-Continent 1 Caldwell, NW SE NE 1-8-3, pumped 14 bbl., Hunton 4,530-4,674 ft., T.D. 5,157 ft.

Continental et al 1 Harding, NE SW 13-8-4, dry, dry, T.D. 4,604 ft., Mayes 3,920 ft., Woodford 3,997 ft., Misener 4,127 ft., Hunton 4,136 ft., Viola 4,306 ft., Wilcox 4,462 ft., second Wilcox 4,558 ft.

Fields

Apache, Caddo (recompletion): Texas 3 Smith, SW SE NW 2-5-12w, flowed 211 bbl. in 9 hr., 3,500,000 cu. ft. gas, deepened from 3,430 ft. to 3,572 ft.

Avant, Osage County: Barnsdall 17, SW SE SW 17-23-12, pumped 30 bbl., Bartlesville sand 1,546-1,606 ft., T.D. 1,618 ft.

Sinclair Prairie 61, NE SW NW 20-23-12, dry, T.D. 1,711 ft., repressure well.

Sinclair Prairie 62, S½ N½ NW 20-23-12, dry, T.D. 1,700 ft., repressure well.

Chickasha, Grady County: Little Nick Oil Co. 3 Glover, S½ NE NE 27-5-8w, 223,000,000 cu. ft. gas, Charleston sand 3,995-4,198 ft., T.D. 4,235 ft.

(Continued on Page 66)

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TEXAS GULF COAST

Small Shallow Gasser Found In Old Shepherd's Mott Area

By F. L. SINGLETON

HOUSTON, Tex.—Continental Oil Co. has completed a small shallow sand gas well in its 3 H. B. Hawkins, a wildcat located in the Shepherds Mott area, 8 miles west of Hawkinsville, Matagorda County. The well, drilled to a total depth of 5,208 ft., was perforated in sand at 3,843-49 ft. Working pressure through a ⅛-in. choke on the tubing with the casing sealed was 1,590 lb. Although not of large commercial importance, the gas will provide a fuel supply for continued development in the area, with location already made for 1 Henry Rugely, a mile northeast.

Shepherd's Mott is one of the older prospects on the Gulf Coast and numerous tests have been drilled or attempted in the area by various operators. Most of the tests have experienced difficulty with heaving shale, which has prevented successful completion of wells, and discouraged active development. Nearly all have had favorable sands and showings and some short-lived production has been obtained. The present gas well is in the J. W. Byrne Survey, on the west side of the structure, believed to be a deeply seated dome.

Additional production tests in Superior-Atlantic 1 McMahan, Deering Creek wildcat area, east of the deep Wilcox sand producing Lake Creek field, Montgomery County, have proved disappointing, and the well has been shut down awaiting orders. On the latest test, with casing perforated in sand at 9,160-65 ft. and hole plugged back to 9,588 ft., the well again flowed salt water. The hole originally was drilled to 12,480 ft. Casing first was perforated at 9,728-48 ft., where in a 4-hour drill-stem test through ¼-in. chokes, 6,000 ft. of salt water was recovered. Next the casing was perforated at 9,674-88 ft., and the hole swabbed salt water.

Ohio Oil Co. has killed its 1 E. L. McDonald, recently completed wildcat producer 4 miles northwest of Bay City, Matagorda County, and will attempt to work over to reduce the gas-oil ratio, which was considered too high. The well had been completed flowing 175 bbl. of pipe-line oil daily through ⅛-in. choke with working pressure of 1,400 lb. on the tubing and 3,000 lb. shut-in casing pressure. Casing perforations at 8,406-08 ft. have been squeezed, preparatory to reperforating slightly lower. The well also has another sand at 7,865-84 ft., which showed for good oil production in drill-stem tests. Total depth of the hole is 8,692 ft., plugged back to 8,459 ft.

Mayo Outpost Makes Dry Gas

Tide Water 1 Ratliff, west outpost to the Mayo field, Jackson County, and located between this field and the Ganado field, flowed dry gas in a 9-minute drill-stem test of sand at 5,400-20 ft. Working pressure through ¼-in. chokes, top and bottom, was 220 lb. Prior to this test, a drill-stem test was attempted in sand at 5,390-5,420 ft., but the tool seat slipped and the test failed. Following an electrical log survey from bottom of hole at 5,500 ft., the well has been awaiting orders.

Possible extension of production 1 mile west and opening of a new deeper sand for the North La Ward field, Jackson County, are indicated by tests being made in Magnolia 1 Moody. This well failed to get production in the regular sands of the field down to 5,200 ft. and was drilled to 7,617 ft., finding a deeper sand at 6,500 ft. Casing was set at 6,527 ft. and perforated in the sand at 6,482-87 ft. First tests showed gas and distillate, but were not entirely satisfactory for commercial production, and perforations have been squeezed for further testing.

Magnolia Petroleum Co. and Placid Oil Co. are reported quitting their wildcat, 1 Huntington, north of Rosenberg, Fort Bend County, after unsuccessful tests of sands at 9,960 ft., 8,210 ft. and 8,170 ft. John Mayo is starting an 8,000-ft. wildcat test, 3 miles north of Clodine, in Fort Bend County. Morris-Hamilton 1 Goldsmith, 1¾ miles north of Barker, Harris County, is shut down awaiting orders after running electrical log with bottom of hole at 7,505 ft.

TEXAS GULF COAST COMPLETIONS

Wildcats

Grimes County: Oswego 1 Bonney, dry, T.D. 3,685 ft.

Fields

Collegeport, Matagorda County: Pure 1 Regier, 726,000 cu. ft. dry gas, 7/64-in. choke, perf. casing 3,972-84 ft., T.D. 4,525 ft.

Hampton, Hardin County: American Republics 2-A Hampton fee, dry, T.D. 7,018 ft.

Hull, Liberty County: Mecom 1 Crosby, 400 bbl., ⅛-in. choke, perf. casing 6,615-48 ft., T.D. 6,674 ft.

Katy, Waller County: Stanolind 1 Bourdette, 200,000,000 cu. ft. gas, open flow, perf. casing 7,072-90 ft., 7,092-7,102 ft., 7,130-50 ft., and 7,192-7,224 ft., T.D. 7,415 ft.

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LOUISIANA GULF COAST

Oil Showing Reported in 9,000-ft. Sand at Hays

By F. L. SINGLETON

NEW ORLEANS, La.—Gulf Refining Co. has cemented casing to test sands showing oil cored from 8,954 ft. to 9,012 ft. in its 1 Amoskeag, Hayes area, Calcasieu Parish, southwestern Louisiana. If the well is completed as an oil producer, it will be the first for this prospect, and will establish the second oil field for the district this year. One gas-distillate well already has been completed at Hayes. It was completed early this year. The present test is the third for the area, the first being dry.

Casing was cemented at 9,012 ft. with bottom of hole at 9,040 ft. The gas-distillate well is producing from sands at 11,660-70 ft. and 11,646-56 ft., although it also encountered the shallower sands showing oil and gas. The new well is reported to have run approximately 80 ft. lower. Seven-inch casing was run to permit deepening of the hole in event test prove unsuccessful, although cores indicate a good well.

Northwest of the Anse La Butte field, in Lafayette Parish, Stanolind Oil & Gas Co. has encountered a new deep sand showing oil at 9,782-9,868 ft. A short string of 5-in. liner has been cemented from 8,850 ft. in the 7-in. casing to 9,902 ft., with bottom of hole at 9,940 ft. An electrolog of the sand section showed 160 millivolts porosity and 6 ohms resistance on the normal curve, 12 ohms on the third curve and 10 ohms on the fourth.

Several important new wildcat tests were started the past week. Among these is Gulf 1 Delta Securities, Bayou Couba area, 14 miles southwest of New Orleans, in St. Charles Parish. It is being drilled with a barge and is scheduled for 7,500 ft. Union Sulphur Co. is moving in for 1 Guemo, 51-8s-2e, about 6 miles north of Rayne, in Acadia Parish. Union Oil Co. of California is dredging canal for 1-C Louisiana Furs, Inc., Township 16s-2e, 8 miles south of its Schooner Bayou field, Vermilion Parish. Vendome Petroleum Co. has location for 1 Bayou La Tour, 2 miles east of the Barataria field, Jefferson Parish, which will be an exploratory test for deep flank sands. Humble Oil & Refining Co. is starting a second test on its Continental Land & Fur Co. prospect, about 12 miles southeast of Morgan City, in Terrebonne Parish. This test, 1-B Continental Land & Fur Co., is about a mile to the south of the first test, drilled to a total depth of 10,254 ft. several years ago.

LOUISIANA GULF COAST COMPLETIONS

Wildcats

Terrebonne Parish: Superior 1 LaTerre, 454 bbl., 11/64-in. choke, perf. casing 10,214-19 ft., T.D. 13,417 ft.

Fields

Fausse Point, Iberia Parish: Texas 12 State, 260 bbl., 10/64-in. choke, sand 8,895-8,945 ft.

Golden Meadows, La Fourche Parish: Texas 16 La Terre, dry, T.D. 6,013 ft.

Grand Bay, Plaquemines Parish: Gulf 10 State QQ, 210 bbl., ⅛-in. choke, perf. casing 9,945-53 ft., T.D. 9,986 ft.

Iowa, Calcasieu Parish: Richardson 1 Tuton, 11½ bbl. dist. and 301,300 cu. ft. gas, 12/64-in. choke, sand 7,380-7,406 ft., T.D. 8,837 ft.

Lake Salvador, St. Charles Parish: Texas 16 State-Lake Salvador, 471 bbl., ⅛-in. choke, perf. casing 9,970-10,000 ft., T.D. 10,250 ft.

Pine Prairie, Evangeline Parish: Gulf 1 Easton Station, 110 bbl. 12 hr., 5/32-in. choke, perf. casing 8,218-28 gt., T.D. 8,236 ft.

Texas 2-B LeDanels, 258 bbl., 10/64-in. choke, perf. casing 9,447-70 ft., T.D. 10,730 ft.

Potash, Plaquemines Parish: Humble 60 Orleans Levee Board, dry, T.D. 10,361 ft.

Quarantine Bay, Plaquemines Parish: Gulf 31 State QQ, 187 bbl., ⅛-in. choke, perf. casing 8,342-50 ft., T.D. 8,391 ft.

Roanoke, Jefferson Davis Parish: Continental 5 Joseph Sturdivant, dry (blew out and cratered), T.D. 9,749 ft.

Ohio Fields

(Continued from Page 55)

Ward, Sec. 5, 2 bbl., shot, first Cow Run, T.D. 675 ft.

EASTERN KENTUCKY

ASHLAND, Ky.—Reports from various eastern Kentucky fields indicate a slight gain in drilling activities with a few new locations reported. It was necessary to repair roads and in some few places equipment following the recent rainy weather but most operations continue on the upward trail.

Knott County: Kentucky-West Virginia Gas Co. 624 Joseph King, on Bates Branch, 2,843,000 cu. ft. gas in Big lime, T.D. 2,155 ft. This is an old well drilled deeper.

Floyd County: Kentucky-West Virginia Gas Co. 687 Mary Stratton, on Toms Creek, 231,000 cu. ft. of gas, shot, in shale, T.D. 3,078 ft.

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Powder Wash Extended In Shallow Gas Horizon

By T. R. INGRAM

DENVER, Colo.—The Powder Wash oil and gas field in northern Moffat County, northwestern Colorado, was extended ½ to ¾ mile east and north in Mountain Fuel Supply Co. 2 Carl Allen, which made 11,660,000 cu. ft. of gas the first 24 hours from sands in the Wasatch formation. Nearest gas well is 1 Donnell, ½ mile to the southwest, completed at 3,102 ft. in 1937 for 3,825,000 cu. ft. Nearest oil wells are 1 Allen, ¾ mile to the south and east, completed in 1936 for 1,140 bbl. of oil at 5,032 ft., and 1 Stewart, the same distance to the south and west, completed in 1937 at 3,113 ft. for 840 bbl.

The Circle Ridge field, Fremont County, Wyoming, was extended slightly to the south in Continental Oil Co. 2 Shoshone-767, which flowed 4 bbl. an hour or at the rate of 96 bbl. daily from the Tensleep at 613 ft., total depth. The spacing pattern for the field is 4 wells to the 40 acres, and this is a diagonal offset on the southeast to 2 Shoshone Indian lease, which bailed at the rate of 30 bbl. a day.

Big West Oil Co. 1 Thiel, SW NW NW 32-35n-4w, Midway district, Toole County, Montana, which is searching for a possible oil production a mile to the northeast of its 1 Vial, found the Ellis-Madison contact dry at 2,295 ft., but there was a show of oil in a break in the lime at 2,325-28 ft., the latter being the total depth. The 5⅝-in. is being run to acidize and test.

Stanolind 1 House, a test in the Holly district, Prowers County, southeastern Colorado, topped the Mississippian at 5,275 ft. and is drilling below 5,744 ft.

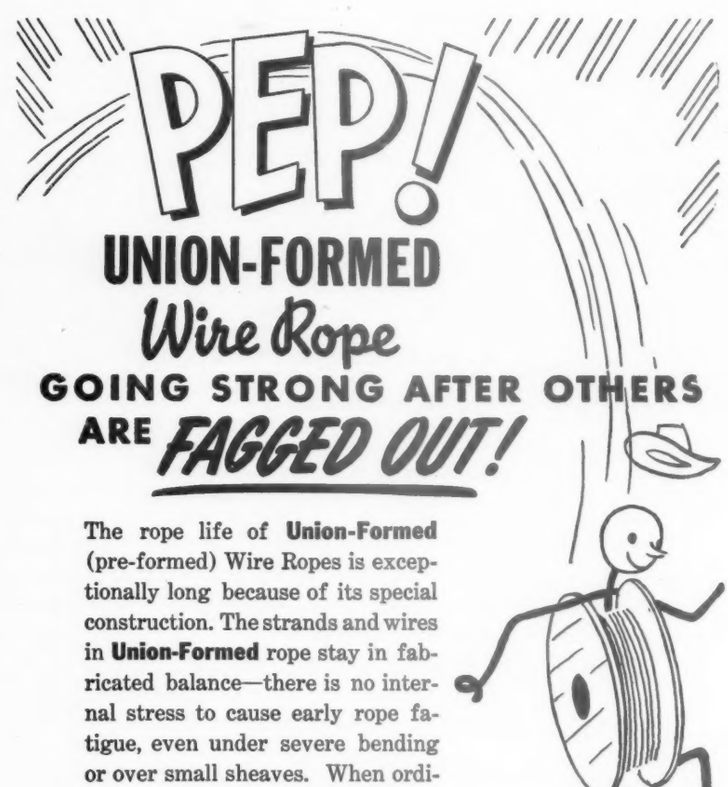
Operations in the Pilot Butte field, Fremont County, Wyoming, where the Superior Oil Co., in a joint operation with the British American Oil Producing Co., brought in a 750-bbl. discovery in the Tensleep horizon this spring, are being stepped up. Superior has three operations under way, one of which is a joint well, and this week British American released six locations, of which one is a wildcat 3 miles northwest of the discovery. The nine wells active in the field are located out from the discovery, the farthest being approximately ½ mile in the four directions. The wildcat is British American 1-C Tribal, NW NW SW 32-4n-1w.

Continental Oil Co.'s freak well, Rattlesnake district, northwest New Mexico, is about ready to drill in and test. The 7-in. casing was run to 5,761 ft. and cemented with 200 sacks. The hole is bottomed 2 ft. in the sand and will be deepened 8 or 10 ft. before the testing. The Government may take over the well for national-defense purposes if tests confirm the first indications.

The Oregon Basin field, Park County, Wyoming, is forging to the front as the most active area in the Rocky Mountain district with the release this week of several additional locations. There are now 18 drilling wells and locations, of which 11 are for the Ohio Oil Co., 2 for Yale Petroleum Co., 2 for the Kirk Oil Co., and 3 for the Husky Refining Co.

The Cisco gas field in Grand County, eastern Utah, has been blocked up in preparation for an attempt to revive the old producing horizon and test deeper formations. A unit agreement was approved on June 2, 1942, and the Department of the Interior has advertised a sale of leases on government land to be held at Salt Lake City, Utah, at the district land office on August 12. Any lease purchased must be put into the unit. The structure comprises an area of 13,500 acres, of which 12,000 acres are vacant public land and 1,460 acres state school land. In 1924 the Utah Oil Refining Co., drilling for the Crystal Carbon Co., brought in the discovery well in SE NE 25-20s-21e, making 90,000,000 cu. ft. a day estimated in the Dakota sand at 1,950 ft. It caught fire and burned for some time. After the fire was extinguished and the well reconditioned, the flow dropped to 10,000,000 cu. ft. An extensive drilling campaign followed during the next 3 years and the Crystal Carbon Co. built a carbon plant to utilize the gas. This plant was dismantled in 1935, the pressure of the wells having gone down. The following year the wells were abandoned with one exception. This well was capped for observation purposes and the U. S. Geological Survey made inspections at intervals. It was found that the gas pressure had built up since the well was shut in and this gave ground, according to the survey, for believing that an adequate supply of gas may now be obtained from the Dakota. The field has never been tested below the Dakota except in one well drilled by the Utah Oil Refining

(Continued on Page 67)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Three Wells in New Black Oak Field Reach Pay Section

By ROBERT INGRAM

MIDLAND, Tex.—By week's end, three wells had reached the Paluxy pay section in the new Black Oak (Coke) pool in Wood County, opened last month by Amerada Petroleum Corp. 1 Kennemer. Latest well to pick up the pay was Amerada 2 Kennemer, J. Knight Survey, south of the discovery well.

During the week a west outpost, General American 1 Rodney, Y'Barbo Survey, was preparing to perforate in the sand which was topped at 6,318 ft. The well went to 6,425 ft., logging 58 ft. of pay, and set pipe at 6,417 ft. Between this well and the discovery, Amerada 1 Darby, also in the Y'Barbo Survey, set casing at 6,394 ft., 3 ft. off bottom, to perforate in sand topped at 6,294 ft. Water sand was topped at 6,388 ft., giving this well about 90 ft. of pay section.

East of the discovery, Amerada 1 Faluk, Knight Survey, was drilling out cement to perforate and test for a water shutoff. Perforated first at 6,230-6,340 ft., the well flowed salt water and sediment briefly and was killed to shoot and squeeze below 6,340 ft.

One location north of this well, Jerry Hawkins 1 Clark, Smith Survey, was drilling below 5,310 ft., and to the west, in the same survey, Amerada 1-A Darby was building derrick for a north offset to the discovery.

Nearly ½ mile south of the Amerada 2 Kennemer, Magnolia Petroleum Co. entered the field with location for 1 H. G. White, 1,230 ft. from the north line and 660 ft. from the west line of the Daniel Townsend Survey.

Club Lake Has 100,000th Well

Texas recently marked the drilling of more than 100,000 producing oil wells, and the Railroad Commission decided that the discovery at Club Lake, Hollandsworth Drilling Co. 1 J. H. Baker, was the 100,000th one. To mark the occasion, the nearby town of Greenville held a celebration, heard speeches by Col. E. O. Thompson, chairman of the commission; Olin Culberson, member of the commission; Henry Bell of Tyler, and other celebrities.

The celebration was held at the site of Hollandsworth 3 Baker, which was completed as a producer the day before, since its derrick was the same one used on the No. 1. The 3 Baker was the third producer for the new field, swabbed in to flow from perforations in the Woodbine at 2,774-90 ft. at the rate of 12 bbl. an hour through ¼-in. choke, about the same as the discovery.

At the same time Humble Oil & Refining Co. had derricks up for two more operations while testing was getting under way at the firm's two indicated producers on the south side—the 1 Aetna Life Insurance Co., Cunningham Survey, and the 1 Morrison, Harris Survey. The two new operations were understood to be the forerunners of increased development on the part of that firm in the field.

Two Wildcats to Smackover

Two wildcats seeking shoreline traps in the Smackover section were announced. They were:

Franklin County: Grady Vaughn et al 1 W. H. Jackson, midway between E and W lines and 1,600 ft. from S line of a 175-ac. tract in J. E. Hopkins Sur., on the north side of the Talco field.

Bowie County: Bowlen et al 1 Simms estate, 660 ft. from the E line and 1,980 ft. from the S line of an 80-ac. lease out of a 2,000-ac. tract, Williams Sur., ¾ mi. E of the Simms townsite.

EAST TEXAS COMPLETIONS

Fields

Bazzette, Navarro County: Jon Hoosier et al 1 E. Black, B. G. Balthrope Sur., gaged 37,000,000 cu. ft. gas, perf. 3,234-52 ft., T.D. 3,325 ft.

Chapel Hill, Smith County: Sinclair Prairie 1 W. L. O'Neal, J. S. McDonald Sur., flowed 424 bbl. through ¼-in. choke, 8,158-90 ft., T.D. 8,389 ft.

Club Lake, Hunt County: Great States 1 M. G. Schenck, M. Latham Sur., dry, T.D. 3,022 ft.

Hollandsworth 2 Baker, I. Handlin Sur., flowed 242.18 bbl. through ¼-in. choke, T.D. 2,970 ft.

F. Prince and E. B. Germany 1 Charles L. Miller, dry, T.D. 3,004 ft.

Hawkins, Wood County: Humble 2 L. A. Bryan, W. Parker Sur., flowed 97 bbl. in 6 hr. through ¼-in. choke, T.D. 4,855 ft.

Humble 1-A J. H. Kirkpatrick, H. E. Watson Sur., flowed 99 bbl. in 6 hr. through ¼-in. choke, perf. 4,491-99 ft., T.D. 4,595 ft.

Humble 1-B J. Palmer, E. Wideman Sur., flowed 85 bbl. in 6 hr., T.D. 4,871 ft.

Lovelady, Houston County: McCullough et al 1 A. V. Hardt, J. Forbes Sur., dry, T.D. 3,309 ft.

Wortham, Freestone County: R. W. Noble 1 E. R. Simmons, P. B. Longbotham Sur., pumped 5 bbl., T.D. 2,928 ft.

Appalachian Fields

(Continued from Page 58)

Washington district: United Fuel Gas Co. 5086 C. W. and S. G. Starcher, 11,698,000 cu. ft. gas, Oriskany 5,180 ft., gas 5,181-94 ft., not shot, T.D. 5,196 ft.

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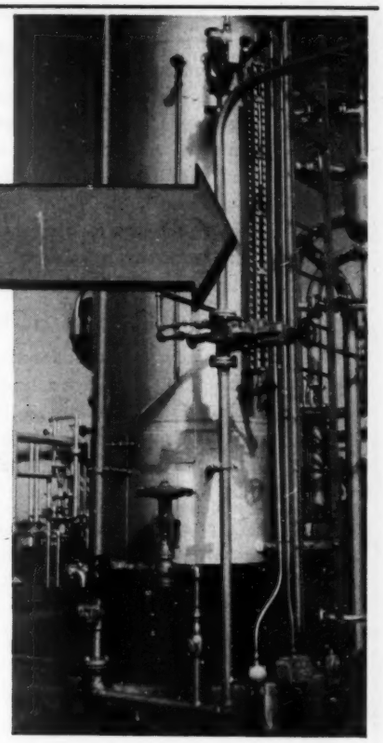

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Arbuckle Lime Pool Opened In Northern Stafford County

By CARL HOOT

COMPLETIONS in Kansas took an upward turn for the week. Nineteen oil and three gas wells out of a total of 40 produced 10,993 bbl. initial potential. Wildcat tests have shown a steady increase since the first of the year, with two producers bringing in new production last week.

In Pratt County, 4½ miles west of the Iuka pool, Hannum Drilling Co. 1 Beck, SW cor. 6-2-12w, was officially completed for 684 bbl. of oil a day from Simpson dolomite at 4,242 ft. Total depth was 4,254 ft. It is the discovery well of West Iuka.

In Stafford County the Hazel pool was opened by W. P. Faulkner et al 1 Ward, E½ SE SW 21-21-13w. Initial production of 2,400 bbl., by bottom-hole pressure test, was from Arbuckle from 3,692-3,703 ft. Location is in the northern part of the county in a group of several small pools, the nearest of which is Gates, some 2 miles east.

Field Completions Running High

In the Peace Creek pool of Reno County, five oil wells and two dry holes were reported. One of the failures was in the southwestern section of the field, a north offset to the Southwest Peace Creek discovery. It is Cities Service 1 Wyss, SW SE SE 29-23-10w, which found the Viola dry at 3,649 ft. and was drilled to total depth of 3,774 ft. in Arbuckle lime. The southwest discovery well is also offset to the south by a dry hole in the Viola at 3,826 ft.

The Smyres pool of Rice County was extended north, south and west by three wells producing from Mississippi lime. R. S. Shade 2 Mattson, NW SE 25-19-6w, pumped 324 bbl. at 3,404-18 ft.; Transwestern Oil 1 Braden, NE NE NW 1-20-6w, a south extension, pumped 188 bbl., and Nelson Drilling Co. 2 Smyres, NE SW NW 36-19-6w, broadened the field to the west. It is a northwest offset to the discovery well.

KANSAS COMPLETIONS

Wildcats

Barton County: Continental 1 Miller, NE cor. 21-16-14w, dry, T.D. 3,476 ft., Lansing 3,203 ft., Arbuckle 3,467 ft.

Phil-Han Oil 1 Weber, NE SW 7-16-12w, dry, T.D. 3,368 ft., Topeka 2,720 ft., Lansing 3,078 ft., conglomerate 3,338 ft., Arbuckle 3,352 ft., oil 3,360-62 ft., increase 3,362 ft., bailed 2 bbl. fluid an hr.

Edwards County: Herndon Drlg. 1 Rudd, SE cor. 9-24-16w, dry, T.D. 4,583 ft., Lansing 3,815 ft., base Kansas City 4,088 ft., Viola 4,513 ft., Simpson 4,518 ft., Arbuckle 4,548 ft.

Ellsworth County: Falcon-Seaboard 1 Brunning, NE NE SE 9-15-9w, dry, T.D. 3,131 ft., Topeka 2,405 ft., Lansing 2,700 ft., base Kansas City 2,980 ft., conglomerate 3,060 ft., Arbuckle 3,102 ft., show oil 2,789 ft.

Phillips County: Helmerich & Payne 1 Teagarten, NW SE 33-5-18w, dry, T.D. 3,605 ft., Lansing 3,205 ft., base Kansas City 3,433 ft., Simpson 3,507 ft., Arbuckle 3,549 ft.

East of Phillipsburg: Carter Oil 1 Shaw, NW NW 23-3-18w, dry, T.D. 3,738 ft., Topeka 3,000 ft., Lansing 3,225 ft., Viola 3,642 ft., Simpson shale 3,655 ft., Simpson dolomite 3,682 ft., Arbuckle 3,702 ft., porosity 3,719-21 ft.

Pratt County: Hannum Drlg. 1 Beck, SW cor. 6-2-12w, flowed 684 bbl., Simpson dolomite 4,242 ft., T.D. 4,254 ft., discovery of Iuka West.

Reno County: Helmerich & Payne 1 Wisby, NE cor. 18-22-9w, dry, T.D. 3,725 ft., Topeka 2,630 ft., Lansing 3,115 ft., Sooy 3,422 ft., Misener 3,483 ft., Viola 3,518 ft., Simpson 3,618 ft., Arbuckle 3,675 ft.

Rice County: Cities Service 1 Ellis, C W½ NE 11-19-8w, dry, T.D. 3,324 ft., Lansing 2,835 ft., conglomerate 3,201 ft., Simpson shale 3,242 ft., Simpson sand 3,266 ft., Arbuckle 3,294 ft., porosity 3,297-3,324 ft.

Stafford County: W. P. Faulkner et al 1 Ward, E½ SE SW 21-21-13w, potential 2,400 bbl., Arbuckle 3,692-3,703 ft., discovery of Hazel pool.

J. J. Lynn et al 1 Wendelburg, S½ NW NE 19-23-11w, dry, T.D. 3,738 ft., Topeka 2,860 ft., Lansing 3,318 ft., conglomerate 3,623 ft., Viola 3,634 ft., Simpson shale 3,672 ft., Arbuckle 3,736 ft. with show oil.

Stanolind 1 Asher, NE NW SE 4-24-13w, dry, T.D. 4,000 ft., Lansing 3,520 ft., Viola 3,868 ft., Simpson 3,896 ft., show oil 3,836 ft. and 3,974 ft.

Trego County: Darby Pet. 1 Findlay, SE NW NW 23-11-21w, dry, T.D. 3,990 ft., Lansing 3,584 ft., Arbuckle 3,922 ft.

Fields

Bemis, Ellis County: Champlin Ref. 4 Glathart, SW NE 29-11-17w, pumped 275 bbl., Arbuckle 3,610-20 ft., T.D. 3,625 ft.

Cities Service 2 Dehoff, NW SW NW 30-11-16w, potential 1,768 bbl., Arbuckle 3,363-76 ft.

Breford, Barton County: Champlin Ref. 1 Nagel, NE SE SE 14-17-11w, dry, T. D. 3,343 ft.

Chase, Rice County: Lauck & Moncrief 1-A Ramiller, N½ SE NE 21-19-9w, pumped 90 bbl., Arbuckle 3,213-44 ft.

Couch, Cowley County: Ryan Consolidated 1-B Victory Life, SW NW SE 12-30-5, flowed 217 bbl., Bartlesville 2,817-45 ft.

Donovan, Russell County: Wolf Creek Oil 1-C Donovan, S½ NE SW 10-15-15w, pumped 150 bbl., Lansing 3,210-20 ft., T.D. 3,319 ft.

Fairport, North, Russell County: B & R Drlg. 1 Shober, W½ SW SE 9-11-15w, dry, T.D. 3,470 ft.

Heiken, North, Ellsworth County: Atlantic 1 Stratman, N½ NE NE 23-17-10w, pumped 90 bbl., Arbuckle 3,224-39 ft.

Holcomb Gas, Kearny County: Fin-Ker Oil & Gas 6 Campbell, CSL 7-25-35, 23,872,000 cu. ft. gas, sand 2,444-2,654 ft.

McLouth, Jefferson County: Hatcher-Fisk 1 Hesse, NE SE 29-9-20, 2,750,000 cu. ft. gas, 1,400-23 ft.

McLaughlin 1 Schmidt, NE SW 1-20-20, 3,240,000 cu. ft. gas, 1,382-92 ft., T.D. 1,399 ft.

McLaughlin 1 Mosley, NE SE NE 5-10-20, 50 bbl., Mississippi lime 1,575-85 ft., T.D. 1,598 ft., show gas 1,408 ft.

McLouth, Leavenworth County: McLaughlin 1 Fidler, NE NW 2-10-20, dry, T.D. 1,434 ft.

Penny Wann, Ellis County: Bay Pet. 1 Penny, SE SW SW 18-15-19w, dry, T.D. 3,710 ft.

Peace Creek, Reno County: Transwestern Oil 1 Potter, SE SW SE 36-22-10w, pumped 268 bbl., Viola 3,687-3,725 ft.

Leader Oil 8 Tonn, SW NW SE 11-23-10w, flowed 50 bbl. in 45 minutes, 3,000-bbl. potential, Viola 3,756-59 ft.

Cities Service 3 Estey, SW SW NW 14-23-10w, dry, T.D. 4,000 ft., Viola 3,824 ft., Arbuckle 3,987 ft.

Cities Service 5 Heylmun, SW NW NE 15-23-10w, pumped 64 bbl., Viola 3,796-98 ft., T.D. 3,801 ft.

Cities Service 1-B Krey, SW NW NE 22-23-10w, flowed 22 bbl. an hr., Viola 3,774-78 ft.

Cities Service 1 Wyss, SW SE SE 29-23-10w, dry, T.D. 3,812 ft., Lansing 3,272 ft., Viola 3,649 ft., Simpson 3,743 ft., Arbuckle 3,774 ft.

Republic Nat. Gas 2 Werner, SW NE NW 15-23-10w, pumped 482 bbl., Viola 3,754-71 ft.

Smyres, Rice County: R. S. Shade et al 2 Mattson, NW SE 25-19-6w, pumped 324 bbl., Mississippi lime 3,404-18 ft.

Nelson Drlg. 2 Smyres, NE SW NW 36-19-6w, pumped 126 bbl., Mississippi lime 3,275-3,303 ft.

Transwestern Oil 1 Braden, NE NE NW 1-20-6w, pumped 188 bbl., Mississippi lime 3,339-63 ft.

Stickney, Barton County: Derby Oil 1 Susank, SE SE NW 19-16-13w, dry, T.D. 3,439 ft.

Skelly 2 Susank, SE SE NE 19-16-13w, pumped 492 bbl., Arbuckle 3,394-3,402 ft.

Trapp, Russell County: Derby Oil et al 2 Dietz, S½ SW NE 22-15-14w, pumped 105 bbl., Arbuckle 3,307-13 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo.—Tank batteries are being installed at Skelly 1 Smith estate in E½ SE SE 3-1n-14e, in the Dawson pool of Richardson County. Some sort of well is there, but in a recent test there was considerable water. The Viola was topped at 2,886 ft. Power Oil Co. 1 Bohrer in the same pool, E½ SW NW 10-1n-14e, actually found oil in the Viola first, but never has been able to produce. A pump has been installed there, but no test reported. Skelly 1 Wiltse in E½ NW SE of 10-1n-14e, the Dawson pool, has been acidized in the Hunton and operators were swabbing. Brown & Clampitt were acidizing their 1 A. B.

(Continued on Page 67)

Wheatville Discovery Opens Third Field on Helm Trend

By L. P. STOCKMAN

LOS ANGELES, Calif. — Amerada Petroleum Corp. officially discovered a new oil field in Fresno County this week and from all indications it will be comparable with the Helm and Riverdale fields which Amerada also discovered. The most significant thing in connection with this discovery, aside from the actual completion of the initial well, is the fact that it indicates the possible existence of another commercial accumulation between Wheatville and Riverdale. These three fields, Helm, Wheatville, and Riverdale, line up from northwest to southeast but there is a break in the frequency interval between Riverdale and Wheatville which suggests the possibility of another productive region in the intervening area. This possibility may be tested out at a later date by Amerada which has large leases in the region. Amerada's Wheatville discovery, 4-6 Truman, in 6-17s-18e, was completed flowing 122 bbl. of very clean oil and 2,263,000 cu. ft. of gas daily from the equivalent of the third Clover zone of Eocene age. The hole was originally drilled to 8,295 ft. but when bottom water showed up on a formation test, the hole was plugged back to 8,020 ft. and production developed in a 30-ft. interval at that point. Gravity of the oil, which is more of a condensate, tested between 61.4-gravity and 67.2-gravity, depending upon the size of the bean used during the production test. This is characteristic of this region in Fresno County, especially with wells drilled into the gas cap area. As wells are drilled down structure a 35 to 40-gravity normal crude is produced. This new well was brought in flowing through a 14/64-in. bean and shows a flow pressure of 2,400 lb., a rather high pressure for such a small volume of natural gas.

Due to the limited amount of drilling undertaken at Helm and Riverdale it is not possible to estimate their future importance from a production standpoint. In the Riverdale field, Amerada has reached a depth of 11,650 ft. in 58-26 Lawton but this deep test has not yet found a productive sand below previously known sands. It is undoubtedly several hundred feet into the Cretaceous and should prove to be a good test of deeper zone possibilities.

Deep Quijarral Hills Test

When the Coalinga Nose was being developed, it was generally agreed that the Quijarral Hills area looked promising and justified a conclusive test. Upon completion of development work in the Coalinga Nose field, R. S. Lytle moved into the Quijarral Hills and began drilling operations on 68-28-F in 28-20s-16e. This wildcat reached a depth of 11,220 ft. late this week but there is little data available as to how the well looks. The well log shows the top of the McClure at 5,715 ft. and top of the Kreyenhagen around 9,000 ft. A formation test of a sand interval, possibly the Gatchell of Eocene age, at 9,420-56 ft., yielded water and some emulsion but no oil or gas. It is interesting to note that Standard Oil Co. has tentative location for a wildcat in this area in 29-20s-16e, about 1 mile northwest of Lytle's present test but it is not believed spud will be made until after the status of Lytle's test has been determined.

In 32-21s-16e, at Jacalitos in Fresno County, Texas Co. is grading roads and hauling in material for a test to be drilled on the Ferguson property. Temblor production is expected although the hole will be drilled entirely through this interval unless production is developed. Wilshire-Annex Oil Co. has developed small production at Jacalitos in the Temblor but in all wells drilled to date only a relatively thin oil sand, approximating 12 to 25 ft., has been found.

Developments in Gas Fields

Three new gas wells have been started in the Rio Vista gas field of Solano-Sacramento counties and two more are scheduled to be started within another week or 10 days. Standard is at present working on 1 McCormack-Shafer in 16-3n-3e, and 1-2 Midland fee in 5-3n-3e, and Amerada Petroleum Corp. is working on 1 Upham in an unsectionized area in 3n-3e. All present work is being done by Brown Drilling Co. In Solano County, Standard Oil Co. has landed casing in 2-1 Suisun Community at 6,779 ft. in 25-3n-1w, indicating a possibility of a test. This wildcat is down 7,300 ft. and may bear watching although all indications point to the probability that a gas sand has been found. In the Marysville Buttes district, the Buttes Oilfields, Inc., has suspended work on 8 Kinch 5,560 ft. due to a combination of mechanical trouble and unfavorable production conditions. Buttes Oilfields, Inc., is developing the Marysville Buttes field where a dry-gas zone has been found surrounding a volcanic plug which is believed intrusive in character and from which large volcanic and igneous rocks have been deposited on the surface. It took a lot of courage to predict the presence of natural gas in the face of such conditions but Walter Stalder, a San Francisco geologist, persisted until he got a well drilled and proved the presence of gas in the district. This gas field has been on constant production for several years although only a limited amount of natural gas is being withdrawn to meet local requirements.

SAN JOAQUIN VALLEY COMPLETIONS

Belridge, South, Kern County: General Petroleum Corp. 3-9 fee, 3-29s-21e, pumped 22 bbl., 15.1-gravity, 35 per cent cut, T.D. 1,019 ft., gravel-packed perf. 625-755 ft., 778-901 ft., 935-1,006 ft., completed in upper zone of Pliocene age.

Devils Den, Kern County: R. B. Moran 1 Beer, 19-26s-19e, dry, gray sand, T.D. 1,608 ft.

Kern River, Kern County: Standard Oil Co. 12-5 Premier fee, 5-28s-27e, pumped 140 bbl. gross, 13.5-gravity, 25 per cent cut, T.D. 2,700 ft., perf. 2,498-2,698 ft., completed in Kern River series of Pliocene age.

Kettleman North Dome, Kings County: Kettleman North Dome Association, Kenda 76-2-P, 2-22s-17e, flowed 186 bbl., 50.5-gravity, 0.5 per cent cut, 9,000,000 cu. ft. gas, T.D. 9,730 ft., 60-mesh perf. 9,438-9,725 ft., brown shale 4,810 ft., Temblor 6,154 ft., completed in McAdams zone of Eocene age.

Midway-Sunset, Kern County: National Oil Co. 4 Midway-Sunset, 35-32s-23e, pumped 40 bbl., 15.9-gravity, 0.2 per cent cut, T.D. 1,946 ft., perf. 1,690-1,945 ft., deepened from 1,808 ft. and recompleted in upper zone of Pliocene age.

Mount Poso wildcat district, Kern County: Trico Oil & Gas Co. 1 Glide, 1-27s-27e, dry, in gray sand, T.D. 2,784 ft., Vedder zone of Miocene age 2,757-70 ft. was barren and consisted of gray sand.

Wheatville, Fresno County: Amerada Petroleum Corp. 4-6 Truman, 6-17s-18e, flowed 122 bbl., 61.4 to 67.2-gravity, 0.1 per cent cut, 2,263,000 cu. ft. gas, 14/64-in. bean, flow pressure 2,400 lb., T.D. 8,295 ft., P.B. 8,020 ft., 80-mesh perf. 7,990-8,020 ft., completed in equivalent of third Clover zone of Eocene age which was first found productive in the Helm field by Amerada Petroleum Corp.

Shallow Sands Being Drilled at Wilmington

Drilling operations are being resumed in the Wilmington field of Los Angeles Basin and the only thing that may prevent aggressive development work will be a shortage of experienced drilling crews. It is interesting to note in this connection, that the zones to be developed at this time in the Wilmington field are located at relatively shallow depths and wells can be drilled from spud to completion in about 3 weeks and wells scheduled to be finished in the so-called tar zone can be brought in from spud to completion in about 2 weeks. There has been a distinct shortage recently of rig builders as men heretofore engaged in this type of work make excellent rigging men or crane operators in the shipbuilding industry. In order to meet the demand for heavy crude oil and thus make available larger quantities of fuel oil, the OPC is granting exceptions to operators in the Wilmington field provided wells are completed above the lower Terminal zone. This means that operators will be able to complete new wells in the tar zone, the upper and lower Ranger and the upper Terminal zones which produce a heavy grade of crude oil or a crude that yields 45 per cent or more fuel oil on straight distillation. The tar zone and the upper and lower Ranger produce a heavy crude ranging from 14 to 20-gravity and the upper Terminal produces a crude testing around 25-gravity but yields about 50 per cent fuel oil.

The Long Beach Oil Development Co. has made locations for 7 additional wells at Wilmington and will have 13 additional locations to be drilled into the tar zone. A recent OPC report recommended that the Wilmington field be developed on the basis of one well to each 5 acres per pool above the lower Terminal zone. This means that with four productive zones above the lower Terminal that each 5 acres is susceptible of containing four wells. It is quite evident, however, that operators will drill dual completions rather than four separate holes as this will reduce the amount of hole required. This will enable operators to keep down the amount of steel necessary and at the same time permit maximum production. It is not at all improbable that 25 new wells may be finished this year. It is not likely that many additional wells will be drilled to the Ranger zone in the so-called town-lot area as it is questionable whether this zone will sustain many more wells. There is considerable undrilled acreage in the Wilmington-Torrance area where the Ranger zone of the Wilmington field extends over into the eastern end of the Torrance field above the normal Torrance zones. Operators were bringing the Torrance and Wilmington fields together at the time M-68 and P-98 became effective but found it necessary to suspend drilling because many of these wells were being drilled on small leases and far below the 40-acre requirement. These outpost wells can be expected to produce about 100 bbl. per day on the beam of the highly desirable 15-gravity oil.

LOS ANGELES BASIN COMPLETIONS

Dominguez, Los Angeles County: Union Oil Co. 85 Callender, 29-3s-13w, flow gas lift 144 bbl., 31.4-gravity, 6.8 per cent cut, 30/64-in. bean, pressures 120/440 lb., T.D. 7,372 ft., P.B. 7,308 ft., perf. 6,877-7,197 ft., 7,262-7,307 ft., completed in sixth and seventh Callender zones of Miocene age on gas lift.

Huntington Beach wildcat district, Orange County: Frankley-Harriman, Inc., 1 Mills, 13-6s-11w, dry, T.D. 4,510 ft., top Miocene 3,795 ft., 10° dips at 4,510 ft.

Active Campaign Expected In Santa Maria Valley

A revival of work is expected to take place in the Santa Maria Valley field of Santa Barbara County in the near future as it has been estimated there are about 300 locations available for drilling whenever desired. This field produces h

(Continued on Page 68)

Two Good Gas Wells Lead In Week's Completions

By OTTO C. PRESSPRICH

SAGINAW, Mich.—Four more oil wells and two more natural-gas producers, one of them ranking near the top for the year, were developed last week in Michigan while six other tests for oil and gas resulted in dry holes. The big gas well is Taggart Brothers of Big Rapids 109 in Section 36 of Marion Township, Osceola County, from which initial flow was at the daily rate of 17,700,000 cu. ft. Taggart's other producer is on the extreme southern tip of the Clare-Redding section. It produced initially at better than 5,100,000 cu. ft. a day.

Two of the new oil wells are additions to the Bay County Kawkawlin field, one drilled by Gulf Refining Co. doing better than 100 bbl. a day, the other being rated at 78 bbl. by United Drillers & Producers.

Other production was in Trowbridge-Allegan and in Richmond-Osceola, where Pure Oil Co. 1 Mund, flowed 72 bbl. the first 9 hours after acid treatment.

As usual most of the failures were in wildcat locations, among them being a Pure test drilled to 4,325 ft. in Roscommon Township, Roscommon County, and another the Ohio Oil Co. 1 Basse, which was dry at 4,440 ft. in Richfield-Roscommon.

The Conservation Department issued six drilling permits last week, two for Osceola County locations, the others for tests in Clare, Lake, Mason and Roscommon counties, bringing the total for the year to 302.

MICHIGAN COMPLETIONS

Allegan County, Hopkins Township: Clifford A. Perry 1 Schraeder, C W½ NW NW 17-3n-12w, dry, T.D. 1,608 ft.

Trowbridge Township: A. W. Winchester 1 Russell, NE SW SE 30-1n-13w, acidized for 30 bbl. and salt water, T.D. 1,331 ft.

Bay County, Kawkawlin Township: United Drillers & Producers 1 Blohm, C N½ NW SW 28-15n-4e, acidized for 78 bbl., T.D. 2,943 ft.

Gulf Refining Co. 1 Wieland, C N½ SW NW Sec. 35, acidized for 52 bbl. in 12 hr., T.D. 2,915 ft.

Clare County, Redding Township: Taggart Brothers Co. 1 Depositors Liquidating Corp., C NW 6-19n-6w. 5,150,000 cu. ft. gas, T.D. 1,328 ft.

Lake County, Chase Township: E. L. Bennight 1 Lee, C N½ SW SW 7-17n-11w, wildcat, dry, T.D. 3,648 ft.

Montcalm County, Evergreen Township: Chapman Oil Co. 1 Frazee, C S½ SE SE 22-10n-6w, wildcat, dry, T.D. 1,084 ft.

Newaygo County, Home Township: Hubbell Oil Producing Co. 1 Britten, C S½ SE SE 23-16n-12w, wildcat, dry, T.D. 3,567 ft.

Osceola County, Marion Township: Taggart Brothers Co. 109 Reber-Gable-Tuller, C NW 36-20n-7w, 17,700,000 cu. ft. gas, T.D. 1,338 ft.

Richmond Township: Pure Oil Co. 1 Mund, C N½ NE SE 6-17n-10w, acidized for 72 bbl. in 9 hr., T.D. 3,625 ft.

Roscommon County, Richfield Township: Ohio Oil Co. 1 Basse, C N½ NE NW 20-24n-1w, wildcat, dry, T.D. 4,440 ft.

Roscommon County: Pure Oil Co. 4-B State-Roscommon, C N½ NW NW 34-21n-3w, dry, T.D. 4,325 ft.

Oklahoma Fields

(Continued from Page 59)

Cumberland, Bryan County: Pure 1 Meyers-110, SE NE SW 34-5s-7, dry, T.D. 6,051 ft., McLish 5,650 ft., sand 6,022 ft.

Cushing, Creek County: J. E. Crosbie 2 Daley, SE SE NW 12-18-7, flowed 90 bbl., sand 2,638-69 ft.

Earlsboro, South, Seminole County: Fred Haddock 1-A Harber, SE NE 23-9-5, dry, T.D. 4,299 ft.

Langston, Logan County: Anderson-Prichard 1 Leachman, NE SE NW 14-17-1w, pumped 50 bbl., Hunton 4,935-62 ft., T.D. 5,151 ft.

Okemah, North, Okfuskee County: Keener Oil & Gas 1-A Parsons, SW SE NE 36-12-9, flowed 292 bbl. in 16 hr., Gilcrease 3,106-45 ft., T.D. 3,180 ft.

Pottawatomie County: Smith Bros. 1 Dawson, NE NE 6-9-3, flowed 21 bbl. of oil and 140 bbl. water, Simpson dolomite 5,545 ft., T.D. 5,687 ft., discovery.

Searight, Seminole County: W. R. Dodson 1-B Wyant, NW SW SW 29-10-6, dry, T.D. 3,485 ft., pumped 10 bbl. oil and 42 bbl. water.

St. Louis, Pottawatomie County: Ed Highfell 1 Bodkins, NW SE 21-8-4, flowed 640 bbl. in 18 hr., Hunton 3,948-65 ft.

Velma, Stephens County: Skelly 32 Selby, SE NW SW 26-1s-5w, pumped 30 bbl., sand 750-69 ft.

Watchorn, East, Pawnee County: Alma Oil 1 Swallow, SW NE NE 26-23-3, flowed 996 bbl. oil and 2,700,000 cu. ft. gas, sand 3,895-3,925 ft., T.D. 3,927 ft.

Alma Oil 1 Oldham, SW cor. 24-23-3, flowed 700 bbl. through choke, sand 3,878 ft., T.D. 3,900 ft.

Miscellaneous

Creek County: Sinclair Prairie 44 Berryhill, SE NW SE 16-17-12, pumped 2 bbl., sand 1,488-1,583 ft.

Okmulgee County: E. Jordan 1 Jones, NE cor. 27-13-14, dry, T.D. 2,516 ft., Wilcox 2,512 ft.

Minshal & Lowery 1 Doneghy, SW NW SW 32-16-12, 1,500,000 cu. ft. gas, sand 2,168-85 ft.

Osage County: Dunn & Miller 2, SW NE NE 36-24-10, pumped 15 bbl., Bartlesville 1,589-1,645 ft., T.D. 1,652 ft.

Permian Basin, Panhandle

(Continued from Page 56)

Ordovician production almost half way from the present southern area of development to the recent Andrews County Ordovician discovery at Embar.

Second Well at Pyote

Stanolind 1-U University, SW SE Section 19, Block 16, was drilled in for the second producer in the Pyote Reef lime pool in Ward County opened in March by Darby Petroleum Co. It is an east offset to the discovery. On official gage it pumped 83.42 bbl. of 22-gravity oil plus 5½ per cent water in 24 hours, natural, from pay at 2,805-35 ft., plugged-back depth.

SOUTHERN WEST TEXAS COMPLETIONS

Wildcats

Pecos County: Grapeland Oil 1 W. T. McKay et al, NW NW Sec. 33, Blk. 1, I.&N.G. Sur., 2 mi. SE of Sheffield, dry, T.D. 1,469 ft.

Runnels County: George Callihan et al 1 E. W. Rainwater, 660 ft. S and 739 ft. W of NE cor. of 250-acre tract in Juan H. San Miguel Sur. 72, dry Palo Pinto lime 3,265 ft., Caddo lime 4,125 ft., Ellenburger 4,515 ft., T.D. 4,670 ft.

Fields

Abell Ordovician, Pecos County: Stanolind 2-A Mary C. Stine, Lot 4, Sec. 24, Blk. 9, H.&G.N. Sur., elev. 2,379 ft., flowed 569 bbl. through ⅝-in. tubing choke natural, Simpson 4,870 ft., Tulip Creek 4,930 ft., McKee 5,247 ft., pay 5,287 ft., T.D. 5,330 ft., P.B. 5,315 ft., *north part of field.*

Stanolind and Anderson-Prichard 1 F. L. Sharp, Lot 12, Sec. 22, Blk. 9, H.&G.N. Sur., elev. 2,396 ft., dry, McKee 5,479 ft., Waddell 5,979 ft., T.D. 6,000 ft., *northwest edge test.*

Estes, Ward County: Gulf 172 Hutchins, SE NW Sec. 10, Blk. O, G.&M.M.B.&A. Sur., elev. 2,618 ft., flowed 688 bbl. through casing after shot, pay 2,469 ft., T.D. 2,520 ft.

Taylor Link, Pecos County: J. D. Lancaster 1-C University, SE SW Sec. 28, Blk. 16, Univ. Sur., elev. 2,522 ft., pumped 12 bbl. oil and 20 bbl. water, pay 1,457 ft., T.D. 1,556 ft., *1-mi. NE outpost.*

Weiner, Winkler County: Ralph Lowe 4 Brown & Altman, SE NW Sec. 24, Blk. B-5, P.S.L. Sur., elev. 2,836 ft., flowed 154 bbl. through 1-in. tubing choke after shot, pay 3,086 ft., T.D. 3,183 ft.

Texas 2 Halley, NE NW Sec. 7, Blk. B-11, P.S.L. Sur., elev. 2,796 ft., flowed 530 bbl. through 1½-in. tubing choke after shot, pay 3,000 ft., T.D. 3,155 ft.

World, Crockett County: H. G. Eastham 2-A Powell, NW NW Sec. 52, Blk. BB, G.C.&S.F. Sur., elev. 2,723 ft., pumped 28 bbl. after acid, lime 2,472 ft., pay 2.549 ft., T.D. 2,607 ft.

TEXAS PANHANDLE

Activity in the Texas Panhandle field continues on a routine pattern with both new wells and completions holding up. Nine first reports for last week were divided into one each for Carson and Moore counties, four in Gray and three in

TEXAS PANHANDLE COMPLETIONS

Gray County: Skelly 3 Saunder-B, Sec. 12, Blk. A-6, potential 62 bbl., shot 2,789-2,882 ft., T.D. 2,921 ft.

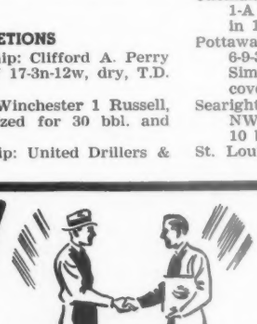
Hutchinson County: J. E. Crosbie 9 E. Cockrell, Sec. 14, Blk. B-3, potential 168 bbl., shot 2,780-2,880 ft., T.D. 2,880 ft.

J. M. Huber 20 Weatherly, Sec. 26, Blk. Y, potential 296 bbl., pay 2,875-93 ft., T.D. 2,946 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Maljamar, Lea County: Phillips 1 Lea-Mex, SW SW 19-17-33, flowed 50 bbl. in 11 hr., pay 4,266 ft., T.D. 4,316 ft., shot and acid.

Rhodes, Lea County: Krupp 1 Flaherty, SW NW 21-26-36, 6,700,000 cu. ft. gas, 3,117 ft., T.D. 3,247 ft.



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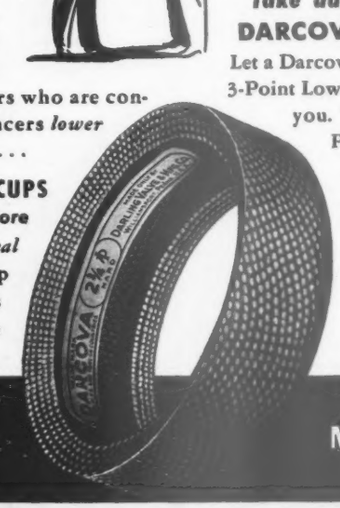

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NORTH LOUISIANA, ARKANSAS

New Pays Found in Lisbon And East El Dorado

NEW Smackover lime production in Union County between the Lisbon and Smackover pools was in sight when cores taken at Lion Oil Refining Co. 1 Lecroy, SE NW 36-16-17, showed porosity in Smackover lime at 6,420 ft. Operators were preparing to make drill-stem tests. The area between Lisbon and Smackover is studded with many small strikes, or pools, and the 1 Lecroy is on the western edge of these fields.

Another development of interest in Union County was the apparent finding of production in the old East El Dorado field near the site of the discovery well, brought in during 1922. Curtis Kinard 1 McCarry, 19-17-14, had a good showing in the Tokio at 2,900 ft. and casing was being set for completion tests. The well was expected to make a small producer. Production in the discovery well of East El Dorado was in sand at 2,170-80 ft.

Completions in North Louisiana picked up last week with nine oil wells and two dry reported. The Haynesville field of Claiborne Parish continues to be the most active. Six wells brought in during the week produced 1,190 bbl. initial potential.

First reports for the Midway field of Lafayette County ran high for the week. The following were locations: Arkansas Fuel 1 Creek, SE NE 9-15-24. Barnsdall: 4-A McClaine, NW NE; 5-A McClaine, NE NE; 6-A McClaine, SE NW; 7-A McClaine, SW NE; 8-A McClaine, SE NE, all in 13-15-24, and 3 Powell, NE NW 10-15-24.

NORTH LOUISIANA COMPLETIONS

Wildcat, Bienville Parish: Arkansas Fuel 1 Merritt, SW NE SW 13-17-7w, dry, T.D. 7,761 ft., Midway 1,337 ft., Saratoga 2,245 ft., Annona 2,313-2,553 ft., anhydrite 4,950 ft., Massive anhydrite 5,178 ft., Pettit 6,513 ft., Travis Peak 6,960 ft.

Haynesville, Claiborne Parish: Magnolia 1 Lowe, SW NW 10-23-8w, flowed 390 bbl., Pettit 5,338-44 ft., T.D. 5,400 ft.

Midstates Oil 1 Hunt, NE SW 9-23-8w, flowed 143 bbl. in 3 hr., Pettit 5,352-65 ft., T.D. 5,425 ft.

Ohio Oil 1 Haynesville Merc. Co., SW SE 13-23-8w, pumped 59 bbl., Pettit 5,241-59 ft., T.D. 5,380 ft.

Ohio Oil 1 Taylor 8-P, N½ SW NW 14-23-8w, flowed 277 bbl. in 11 hr., Pettit 5,240-66 ft., T.D. 5,370 ft.

White & Hinton 1-A Bond, NE SW SE 21-23-8w, flowed 250 bbl. in 8½ hr., Pettit 5,400-17 ft., 5,466-74 ft., T.D. 5,532 ft.

Midstates Oil 1 Barker, SW SW 21-23-8w, pumped 71 bbl., Pettit 5,447-52 ft., 5,502-08 ft., T.D. 5,800 ft.

Little Creek, La Salle Parish: O'Meara Bros. 1 Tremont, SE NE 23-9-1, flowed 150 bbl., pay 2,429-32 ft., T.D. 2,734 ft.

Nebo, La Salle Parish: H. L. Hunt F-93 Goodpine-Graham, E½ SW NE 22-7-3, flowed 65 bbl., Wilcox 2,517 ft., perf. 3,976-80 ft., T.D. 4,209 ft.

Placid Oil 2 Graham, Sec. 40-7-3, flowed 123 bbl., perf. 3,690-3,700 ft., T.D. 4,231 ft.

Trout, La Salle Parish: H. W. Todd 1 Whatley, SE NW 19-8-3, dry, T.D. 3,281 ft., Wilcox 2,303 ft.

Vivian, Caddo County: A. P. Gilbert 1 Spell, SW SE NW 35-22-16w, abandoned location.

ARKANSAS COMPLETIONS

Midway, Lafayette County: Southwood Oil 1 McClain, SE NE 14-15-24w, abandoned location.

Southwood Oil 1 Turner, SW NW 12-15-24w, abandoned location.

Fouke, Miller County: Carter Oil 5-B Sturgis, SE SE SW 2-17-27, flowed 240 bbl., Sturgis sand 3,602-24 ft., T.D. 3,885 ft.

Hillsboro, Union County: D. V. Lacefield 3-B Summers, NE SW NW 24-18-14w, pumped 28 bbl., sand 2,214-28 ft., T.D. 2,235 ft.

Stephens, Ouachita County: R. H. Crow 1 Boyce, SW SE NW 7-15-19w, T.D. 4,031 ft.

Rocky Mountain Area

(Continued from Page 62)

Co. in 30-2s-2e, in 1925 which went to 3,045 ft. It stopped in the Todilto of Jurassic age, probably the equivalent of the Sundance in Wyoming.

COLORADO COMPLETIONS

Powder Wash field, Moffat County: Mountain Fuel Supply Co. 2 Carl Allen, SE NE NW 32-12n-97w. T.D. 4,006 ft., 8⅝-in. on bottom perf. opposite as sands in the Wasatch at 2,130-37 and 3,996-4,006 ft., initial production through tubing at 3,991 ft., 11,660,000 cu. ft., R.P. 1,459 lb.

WYOMING COMPLETIONS

Byron field, Big Horn County: Ohio Oil Co. 2 Cozzens, Lot 46 (approx. SE SW SE) 23-56n-97w. T.D. 5,316 ft., 7-in. 5,253 ft., pumped 425 bbl. from the Tensleep.

Circle Ridge field, Fremont County: Continental Oil Co. 2 Shoshone-767, SW NW SW 6-3n-2w. T.D. 665 ft., top Tensleep 460 ft., 8⅝-in. 459 ft., top saturation 545 ft., flowed 4 bbl. an hour, shut in.

MONTANA COMPLETIONS

Kevin-Sunburst field, Toole County: Welch Brothers 5 Zachor, CWL NW NE 29-35n-1w. T.D. 1,700 ft., P.B. to 1,348 ft. and completed in Sunburst for 8 bbl.

Kansas Fields

(Continued from Page 64)

Cornelius in the Dawson pool, E½ SE NE of 4-1n-14e. This is a Hunton producer. Cities Service Co. 1 Morehead estate in SW NE of 16-3n-16e, Richardson County, in the Shubert area, was drilling below 2,250 ft.

Skelly Oil Co.'s wildcat test 4 miles east of Oregon in Holt County, Missouri, E½ SE SE 32-60n-37w, was drilling below 2,500 ft. in the Hunton lime. The company has adopted a tight-hole policy.

NEBRASKA COMPLETION

Wildcat, Richardson County, 8 mi. NW of Dawson pool: Towle e al 1 Horolek, NE cor. 29-2n-13e, dry, T.D. 1,822 ft.

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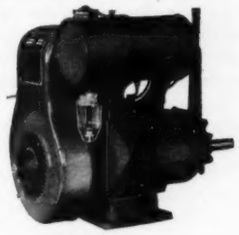

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NORTH CENTRAL TEXAS

Showings Northeast of Turner Area May Mark Extension

By ROBERT INGRAM

WICHITA FALLS, Tex. — Some promise of more than a 1-mile-northeast extension for the Turner area, north of Bowie in Montague County, was seen at Continental Oil Co. 1 Jack Hildreth, Block 53, E.T. Survey, which had a show in the conglomerate. On a 22-minute drill-stem test at 6,249-80 ft., it recovered 85 ft. of oil-cut mud and an estimated 75,000 cu. ft. of gas.

This was the second showing tested at the well. In a sand section at 5,994-6,005 ft., it had shown 60 ft. of oil and 80 ft. of oil-cut mud on a drill-stem test. At week's end, however, operator was drilling ahead to test deeper zones. At present, only the discovery well, W. H. Gant 1 Turner, is producing in the pool, opened in October 1941.

Meantime, development was holding a steady pace in other Montague County areas, currently the most active wildcat county in the state. A second well was brought in at the Sanders discovery, and Sinclair Prairie Oil Co. got under way with another new wildcat, the 2 J. H. Eanes, G. A. Bench Survey, a 7,500-ft. test, 7 miles southwest of Bowie.

At the Sanders pool, Sinclair Prairie 1 Hill, Section 115, Belcher subdivision, 4 miles southwest of Nocona, flowed 505.6 bbl. of oil in 6 hours through tubing from conglomerate at a total depth of 5,961 ft. The area is probably an extension to the new Clingingsmith pool in the Rogers & Rogers area, but is officially classed as a separate pool.

Three miles west of Bowie, Jerry Hawkins 1 Lowrie, Section 2824, T.E.&L. Survey, was drilling below 6,643 ft. in black shale after indicating possibilities for production from saturated conglomerate at 6,244-67 ft., and to the north, Benson Brothers 1 Staley, Section 20, Block 4, H.&T.C. Survey, south of Ringgold, was delayed with a fishing job at 6,039 ft.

Dry Hole and Producer at Spring

In the new Spring area of Clay County, Texas Co. 1 H. D. Stine, Section 24, Block 4, H.&T.C. Survey, was drilled in making 15 bbl. an hour natural from Caddo lime at 5,602-09 ft. It was estimated at 450 bbl. a day, and operator expected to acidize.

At the same time, Continental Oil Co. decided against deepening 3 Spring, Section 23, Block 4, H.&T.C. Survey, and abandoned the well at 6,203 ft. in the Ellenburger. Continental 4 Spring, a northwest outpost, was drilling below 3,960 ft.

Baylor County Discovery

After completing the discovery well in the new Baylor County discovery, Jordan Petroleum Co. staked a northwest offset, the 1 Stanton, southwest corner of a 400-acre lease in Fayette C.S.L. Survey. The company also staked 1 British American fee, 3,338 ft. from the south line and 3,708 ft. from the west line of the survey.

Ellenburger Show in Archer

Ellenburger dolomite carrying shows, logged by electrical survey at 4,886-4,902 ft. and 4,909-18 ft. were to be tested at G. W. Cooper 1 Knight, Block 69, W.V.F.L. Survey, 1 mile northwest of Holliday. The well went to 5,028 ft. and liner was being set.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Baylor County: Jordan Petroleum 1 Fayette County, 510 ft. S and 852 ft. W of SE cor. of W 750 acres of N 1,500 acres of Fayette C.S.L. Sur., A-148, pumped 90 bbl. oil and 30 bbl. water, lime 3,017-23 ft., acid, T.D. 3,023 ft., *discovery*.

Montague County: Continental 1 J. E. Penn, E. A. Topper Sur. A-1265, dry, Caddo 6,104 ft., Viola 6,692 ft., Simpson 6.922 ft., Ellenburger 7.370 ft., T.D. 7,561 ft.

Fields

Brockman, Throckmorton County: Jones & Stasny 2 C. R. Brockman, SW SW Sec. 94, Comanche Indian Reserve, pumped 24 bbl. oil and 75 bbl. water, Callo lime 4,708-61 ft., T.D. 4,761 ft.

Freeman-Hampton, Archer: Fain-McGaha 28 W. P. Ferguson-C, Sec. 1, S.P. Sur. A-416, T.D. 654 ft., input well.

Hoefle, Jack County: Hanlon-Buchanan 1 Pattie Griffin et al, Sec. 1, S.P. Sur. A-579, flowed 412 bbl., lime 4,866-74½ ft., T.D. 4,874½ ft.

K.M.A.-Ellenburger, Wichita County: E. C. Oil 28 Mrs. Anna Mangold, SE SE Lot 35, Mangold subdivision, P. Castleman Sur. A-35, flowed 1,392 bbl., acid, pay 4,322-60 ft., T.D. 4,360 ft.

E. C. Oil 6-E Mrs. Anna Mangold, NE NE Lot 35, Mangold subd., P. Castleman Sur. A-35, flowed 1,606 bbl. after acid, pay 4,295-4,364 ft., T.D. 4,364 ft.

Kadane-Griffith Oil 10-E Mrs. Anna Manold-A, Lot 38, Mangold subd., P. Castleman Sur. A-35, flowed 1,346 bbl. after acid, pay 4,242-4,306 ft., T.D. 4,306 ft.

Thornberry, Clay County: Akin, Dimock & Costley 3 J. B. Patrick-A, Sec. 82, Byers Brothers subd., pumped 56 bbl., pay 1,107 ft., T.D. 1,112 ft.

Miscellaneous

Archer County: Morgan & Turner 1 G. B. Hamilton estate-A, Sec. 1, Crawford subd., I. Hollman Sur. A-162, dry, T.D. 1,520 ft.

Wimberly Pool Extended to North by Good Producer

FORT WORTH, Tex.—The Wimberly pool in Jones County was extended north by a good well at Jones & Stasney 1 Mashburn, 330 ft. out of the southeast corner of the south half of Subdivision 86, Godwin subdivision of De Witt C.S.L. Survey 126. The well flowed 250 bbl. of fluid in 6 hours, 80 per cent oil and 20 per cent water after acid from a 5-ft. pay section.

Meantime, Fain-McGaha Oil Corp. 1 Kirby, north and east of 1 Mashburn, was rigging up and Clark & Cowden 1 Mashburn, also on the north edge of the field, set 8¼-in. casing at 1,850 ft. Northeast of the pool, Fain-McGaha made location for 1 L. L. Horne, 330 ft. out of the northeast corner of G. Martinez Survey 137.

Try for New Well at West Avoca

A new try for production in the West Avoca field in Jones County, was slated at M. J. Delaney 2 O. L. Short, 1,331 ft. west of the same operator's 1 Short, only producer in the pool. The new location is 990 ft. from the east line and 1,015 ft. from the north line of SW Section 191, B.B.B.&C. Survey.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Jones County: M. J. Delaney et al 1 L. C. Hastings, Sec. 191, B.B.B.&C. Sur., dry, T.D. 3,268 ft.

Nolan County: Tex Harvey et al 1 C. W. Tipton, Sec. 43, Blk. 19, T.&P. Sur., junked, T.D. 1,340 ft.

Fields

Cook, Shackelford County: Roeser & Pendleton and Continental 14-A W. I. Cook estate, Sec. 117, E.T. Sur., pumped 144 bbl., sand 1,706-10 ft., T.D. 1,712 ft.

Novice, Coleman County: States Oil et al 3 Frank Hudson-B, Sec. 22, Blk. 2, T.&N.O. Sur., flowed 52 bbl. through ½-in. tubing choke, shot 3,563-90 ft., T.D. 3,598 ft.

California Fields

(Continued from Page 65)

crude oil ranging from 13 to 16-gravity and yields about 55 per cent fuel oil on straight distillation, a highly desirable quality at the present time. Fuel oil produced from crude oil derived in the Santa Maria Valley field is now in favor because it permits the use of gas oil or other blending agent to place it within Navy fuel-oil specifications. This blending reduces the average sulfur content, builds up volume and furnishes a market for gas oil which accumulated at a good rate last year. The only disadvantage in connection with Santa Maria Valley production at the present time is the fact that it has to be either moved by water or move a considerable distance by pipe line to reach refining centers. The high yield, however, makes Santa Maria Valley crude highly desirable in a market that demands top production of fuel oil. This crude contains about 20 per cent gasoline but since this is substantially below the average yield it should not tend to discourage production activities in the Santa Maria Valley field.

In Ventura County, Chanslor-Canfield Midway Oil Co. has reached a depth of 9,030 ft. in 10-C Hobson, a deep test under way in the Rincon field and the present formation is a brown shale. The oil sand found in a prior deep well should be picked up very shortly although it is not the present intention to produce this 10,000-ft. zone unless porosity and permeability proves more favorable than in the previous deep test. The Rincon field is located at the western end of the extensive Ventura Avenue anticline at a point where it plunges beneath the Pacific Ocean. The Ventura Avenue field, located on the eastern end of this major anticline, is one of the most prolific fields in the state but Rincon is of secondary importance.

So far the deep zone cored in two wells has lacked porosity and has been found too tight to produce commercially.

COASTAL DISTRICT COMPLETIONS

Santa Maria Valley, Santa Barbara County: Union Oil Co. 3-4 Moretti, 14-10n-35w, pumped 47 bbl., 12.5-gravity, 50 per cent cut, T.D. 5,279 ft., perf. 5,004-5,277 ft., bottomed in Franciscan basement 5,255-79 ft., completed in Monterey of Miocene age.

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Taber Well Looks Like Best Outside of Turner Valley

By VICTOR LAURISTON

CHATHAM, Ont. — In the Taber field, southern Alberta, Standard of British Columbia 1 Province, LSD 9, 18-9-16w4, looks like the biggest crude producer in Canada outside Turner Valley. Encountering water in the lime at 3,274 ft. it was plugged back to test the Sunburst sand between 3,160-73 ft., when it swabbed at the rate of from 200 to 300 bbl. daily, of water-free crude. A continuous 24-hour swabbing test gave 239 bbl. with 210 bbl. the second day. Crude is around 18° A.P.I. At times during the tests the well showed indications that it might flow but it will be put on the pump as soon as equipment can be secured. Two 5,000-bbl. sumps have been dug, and two 500-bbl. storage tanks have been erected. The well, located 3½ miles south of Taber, was a joint test by Standard of British Columbia and Nassau Exploration of Calgary with holdings of more than 11,000 acres. Further drilling will be undertaken as soon as the discovery well is definitely completed.

Standard 1 Province opens a new area approximately 2 miles south and east of that developed by Plains Petroleum of Toronto several years ago. Plains Petroleum drilled several producers but encountered water troubles. Operations were eventually discontinued, but last year Majestic Mines reconditioned Plains 2, which has since been pumping about 30 bbl. daily, actual deliveries in May totaling 1,032 bbl.

Hi-Test Petroleum 1, LSD 7, 24-9-17w4, about a mile west of Standard 1, is working on derrick and will probably spud this month. The Hi-Test company is headed by R. L. Clancey of Toronto, formerly associated with Plain Petroleum. The company has contracted for 1,500 bbl. monthly from Plains 2 for fuel, and is planning a program of five wells. Noble Drilling Co. 1, 33-8-17w4, north and west of Taber, has resumed from 250 ft.

Turner Valley Completion

Major Oils 9, LSD 1, 4-21-3w5, in North Turner Valley, finished at 8,601 ft. with Madison lime at 7,718 ft., developed 1,667 bbl. daily initial production, and has been producing under strong back pressure more than 900 bbl. daily with gas-oil ratio of 1,500 cu. ft. Temporary allowable, pending final tests, has been increased from 400 to 600 bbl. daily. The well, one of the largest recent North Turner Valley completions, is the most easterly producer in the north extension, and apparently east of the crest of the structure. Farther north, another east-side well, Major 7, LSD 7, 8-21-3w5, finished in black lime at 8,441 ft. with Madison at 7,925 ft., and is acidizing and testing.

Immediately west of Major 9 producer, Foothills Oil & Gas 10, LSD 2, 4-21-3w5, has completed redrilling and deepening in the Madison for a thorough test of unusual conditions in the lime. The well got the Madison at 6,619 ft. and was drilled 1,733 ft. in the formation to finish in the black lime at 8,352 ft. Normally, the black lime is encountered around 450 ft. in the Madison, with two main porous sections, which seem to have been repeated in the Foothills well.

Wildcats Abandoned

In the Tilley field, eastern Alberta, Northwest Co. 5, LSD 3, 17-17-12w4, has been abandoned at 3,253 ft. In the same area, Northwest 2 was a small producer and Northwest 4 finished a gasser, two other tests being abandoned. Imperial Oil, of which Northwest Co. is a subsidiary, has located a new test, Imperial-Monogram 1, in LSD 14, 24-16-10w4, some 17 miles east and south of the previous Tilley wells.

In the Eyremore district, in eastern Alberta, 15 miles west of Brooks, Standard of British Columbia 1, LSD 4, 24-18-17w4, was abandoned at 4,960 ft., some 478 ft. in the Madison limestone.

In the Jenner area, eastern Alberta, Northwest Co. 1, LSD 2, 15-22-9w4, finished at 3,243 ft. It was plugged back and perforated to test a gas sand which yielded around 200,000 cu. ft. The well has been abandoned.

Vermilion Field

In the Vermilion field, eastern Alberta, Northwest-Claysmore 1, LSD 4, 34-50-8w4, finished below 1,764 ft with a small show, and has been abandoned. This was the first of a group of four tests located 11 miles west of the proven field. Northwest-Tovell 1, 10 miles northeast of the Claysmore well, has spudded, and is below 424 ft. North of the field, Mid-field 2 has been spotted in LSD 1, 1-51-5w4, ½ mile west of O'Sullivan 1. In the main field, W. de Koch-Alberta Southern 1, LSD 15, 20-50-5w4, is pumping around 30 bbl., and Meeken 1 has a similar production. Vermilion Refining Co. at Borradaile in June shipped 6,142 bbl. of processed fuel oil from its plant, and is arranging for a 6,000-bbl. crude

(Continued on Page 75)

LEGAL

United States Department of the Interior, District Land Office, Salt Lake City, Utah. Notice is hereby given that the lands herein described within the known geologic structure of the Cisco Dome Gas Field, Utah, are offered to qualified bidders of the highest amounts offered per acre as a bonus for the privilege of leasing the land under Section 17 of the leasing act, as amended by the act of August 21, 1935 (49 Stat. 674; 30 U.S.C. 226) at a sale to be held in the United States Land Office at Salt Lake City, Utah, at 10:00 o'clock a.m., August 12, 1942, in the following units: Parcel No. 1, T. 20 S., R. 21 E., sec. 1, lot 4, S½NW¼, SW¼, NW¼SE¼, S½SE¼, sec. 12, NW¼; Parcel No. 2, T. 20 S., R. 21 E., sec. 3, lots 1, 2, S½NE¼, SE¼ sec. 10, E½; Parcel No. 3, T. 20 S., R. 21 E., sec. 3, lots 3, 4, S½NW¼, SW¼, sec. 10, W½; Parcel No. 4, T. 20 S., R. 21 E., sec. 4, SE¼NE¼, NE¼SE¼, S½SE¼; sec. 9, E½; Parcel No. 5, T. 20 S., R. 21 E., sec. 11, all; Parcel No. 6, T. 20 S., R. 21 E., sec. 12, NE¼, S½; T. 20 S., R. 22 E., sec. 7, lots 2, 3, 4, SE¼SW¼; Parcel No. 7, T 20 S., R. 22 E., sec. 18, lots 1, 2, 3, 4, SW¼NE¼, E½NW¼, E½SW¼, NW¼SE¼, S½SE¼, sec. 19, lots 1, 2, E½NW¼; Parcel No. 8, T. 20 S., R. 21 E., sec. 13, all; Parcel No. 9, T. 20 S., R. 21 E., sec. 14, N½, NW¼ SW¼, S½SW¼, SE¼; Parcel No. 10, T. 20 S., R. 21 E., sec. 15, all; Parcel No. 11, T. 20 S., R. 21 E., sec. 21, E½NE¼, sec. 22, N½, N½SW¼, SE¼; Parcel No. 12, T. 20 S., R. 21 E., sec. 23, all; Parcel No. 13, T. 20 S., R. 21 E., sec. 24, all; Parcel No. 14, T. 20 S., R. 22 E., sec. 19, lots 3, 4, NE¼, E½SW¼, sec. 20, NW¼NW¼, S½NW¼; Parcel No. 15, T. 20 S., R. 22 E., sec. 20, W½SE¼, sec. 29, E½; Parcel No. 16, T. 20 S., R. 22 E., sec. 20, SW¼, sec. 29, W½; Parcel No. 17, T. 20 S., R. 22 E., sec. 30, lots 1, 2, 3, 4, E½, E½W½; Parcel No. 18, T. 20 S., R. 21 E., sec. 25, all; Parcel No. 19, T. 20 S., R. 21 E., sec. 22, SE¼SW¼, sec. 26, N½, N½SE¼; SE¼SE¼, sec. 27, N½NE¼, SE¼NE¼; Parcel No. 20, T. 20 S., R. 22 E., sec. 31, lots 1, 2, 3, E½, E½NW¼, NE¼ SW¼; T. 21 S., R. 22 E., sec. 5, NW¼NW¼ (unsurveyed), sec. 6, NE¼ NE¼ (unsurveyed). Each lease will be made subject to the unit plan for the Cisco Dome Unit Area, Utah, approved June 6, 1942. Mimeographed copies of the plan will be available for distribution to parties interested in bidding at the local land office in Salt Lake City, Utah, and offices of the oil and gas leasing division, Geological Survey at Salt Lake City, Utah, Casper, Wyoming, and Washington, D. C. Upon acceptance by the Secretary of the Interior of any bid for the unsurveyed tracts they will be surveyed at Government expense. Each successful bidder must deposit on date of sale with the officer in charge of the sale a certified check on a solvent bank or cash for one-fifth of the amount bid by him and file a showing of qualifications to receive a lease as required by section 7 of circular 1386. The remainder of the bonus bid and annual rental must be paid prior to the issuance of the lease. Bids may be submitted for two or more parcels regardless of the acreage involved since each lease will be made subject to and operated under a prescribed unit plan of development and operation. Bidders are warned against violation of section 59, United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Register.

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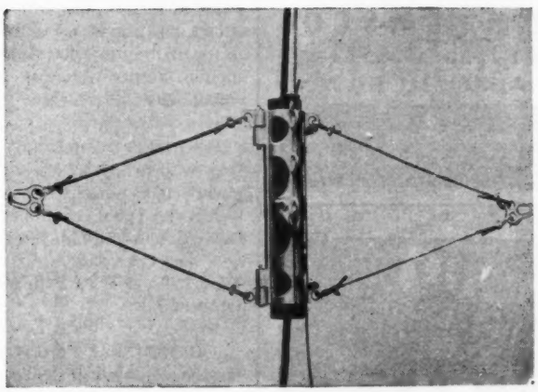

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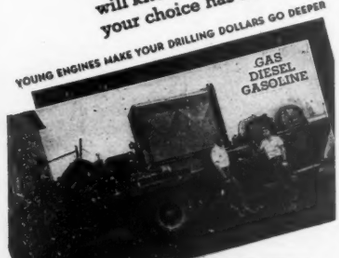

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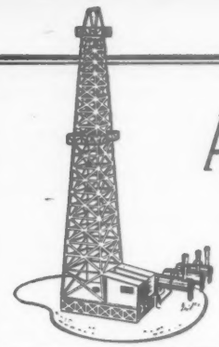


Among the Drilling

GRADY VAUGHN, Dallas, Tex., has the contract for a 9,500-ft. Smackover lime wildcat to be drilling in Bowie County, East Texas, as Bowlen 1 Simms estate, Williams Survey, ¾ mile east of the Simms townsite. Work is to be started before the end of July. Bowlen and associates have 2,500 acres in and around the Stanolind Oil & Gas Co. and Arkansas Fuel Oil Co. blocks in the area. These firms, along with the Barnsdall Oil Co., are supporting the venture.

HARRY BALDWIN, San Angelo, Tex., is to complete a 2,500-ft. cable-tool contract on M. D. Bryant 1 J. A. McDonald, wildcat in Pecos County, Texas, 6 miles south of Girvin, and after that a rotary rig will be moved on for drilling to 5,000 ft. unless production, sulfur water on granite is found before that depth.

HERRING Drilling Co., Abilene, Tex., who drilled Jones & Stasney 1 Mashburn, a north extension to the Wimberley pool in Jones County, Texas, acquired a half interest in the well and operation of it. The well made 250 bbl. of fluid in 6 hours, 80 per cent oil.

A. G. BEDNER, Fort Worth, Tex., has the contract to drill three tests for Stanley A. Thompson, also of Fort Worth, in Young County, Texas, 3½ miles east of Graham. All will go to 4,300 ft. with rotary. The wells are 3 J. C. Vaughn, T. B. Clark Survey A-1796; 4 J. C. Vaughn, T. B. Clark Survey A-1796, and 5 J. C. Vaughn, T.&N.O. Survey A-1248.

ASHBY Drilling Co. will assist in drilling Charles W. Teater 1 George Pipe, C S½ SE SW 18-17n-18w, Mason County, Michigan.

NOBLE Drilling Corp., Tulsa, is contractor on Stanolind Oil & Gas Co. 1-W University, Section 19, Block 10, University Survey, in Andrews County, Texas, 1¾ miles northwest of Phillips Petroleum Co. discovery well. This test is one of three in the area projected to the Ordovician.

RUSO Drilling Co. had oil stains in the Lansing on its 1 Stroebel, in NE NE SW 1-28-4w, Sedgwick County, Kansas, and was drilling below 3,600 ft.

McDANIEL & BEECHURL, Dallas, Tex., have the contract to drill Neville G. Penrose 1-B University in Section 14, Block 10, University Survey, a 1½-mile-northeast outpost to the Mascho discovery in southwestern Andrews County, Texas. Contracted to 4,600 ft. with rotary, the test is to be started this week. It is on acreage obtained for cash and an override from Ohio Oil Co.

MORRIS-HAMILTON Drilling Co., Houston, Tex., has shut down its rig on 1 Goldsmith, a wildcat test north of Barker, Harris County, Texas. Gulf Coast, after drilling to 7,505 ft. The well is awaiting orders after running electrical log.

SIEMONEIT Drilling Co., Fort Worth, Tex., has been given the contract by Neville G. Penrose of Fort Worth, Tex., to drill 1-A University, Section 3, Block 10, University Survey, ½ mile southeast of the West Fuhrman pool in Andrews County, West Texas, a farmout from Humble Oil & Refining Co.

GRAY & WOLFE, Houston, Tex., are continuing drilling in their 1 Grogan-Cochran, deep wildcat test on the 2,200-acre block southwest of the Lake Creek field, Montgomery County, Texas, in which they recently sold controlling interest to La Gloria Corp. The test is projected to 10,300 ft.

W. W. ZIMMERMAN, McAllen and Rio Grande, Tex., has contract to deepen E. A. Schmitt 1 Gonzales, now standing at 3,901 ft., to 6,500 ft. Rig will be moved on as soon as released from another well. The same contractor is nearing the 4,500-ft. contract depth in Fidelity Oil & Royalty 1 Sugarland Industries, a mile north of the Boyle field, south-central Starr County.

BREWSTER-BARTLE Drilling Co., Houston, Tex., is keeping rig on Ohio 1 McDonald, recently completed wildcat producer 4 miles north of Bay City, Matagorda County, Texas, which has been killed in preparation to working over to reduce high gas-oil ratio. The well has been producing from sand at 8,400 ft.

FAIN Drilling Co. has the contract for a scheduled 8,500-ft. Wilcox test in Goliad County, Texas, on a farmout from Continental Oil Co. covering half the firm's 1,500-acre J. E. Pettus lease in the Sebastian Vela Survey. The acreage is 5 miles northeast of Charco.

PARKER Drilling Co. has announced location of a new wildcat test in Kearney County, Kansas, 7 miles from the Patterson pool, in virgin territory. The test will be the 1 Druley, SE SE NE of 28-23-37w, on a Stanolind farmout, and materials are on the ground.

PENROD Drilling Co. has contracts on two tests in the Nebo area of Louisiana. Placid Oil Co. has staked locations for two Wilcox tests in this La Salle Parish area. These are 1 Taylor, in SW of 40-7n-3e, and 1 Wilkins, in SE of Section 40.

Crew of Carl Short, Inc., at Pure Oil Co. 2 Little 109, at Cumberland, Okla. The men are: Bob Webster, backupman; Glenn Strange, piperacker; L. L. Boone, motorman; E. W. Loftin, derrickman, and I. W. Rogers, driller

Contractors

NOBLE Drilling Co. is making fast time on Stanolind Oil & Gas Co. 1 Ratcliff, in SW NW NE of 10-10n-3e, near the Shawnee airport, Shawnee, Okla. Last Saturday the well was drilling below 2,400 ft.

F. P. CULLUM, Wichita Falls, Tex., is drilling Continental Oil Co. 4 Spring, Section 23, Block 4, H.&T.C. Survey, a northwest outpost to the Spring pool of eastern Clay County, Texas.

MABEE Drilling Co. is getting the contract for Cities Service Oil Co. 2 Faulkner, SW SW NW of 11-15n-4w, in the Navina field of Logan County, Oklahoma.

HELMERICH & PAYNE, Inc., Tulsa, has the contract for Gulf Oil Corp. 1 Chaffin, C SW SW 25-1n-25w, 20 miles southeast of Hollis, in Harmon County, Oklahoma. It is situated on a core-drilled, seismograph prospect detailed after original surface-structure exploration.

ZEPHYR Drilling Co. has been awarded contract and was moving in Saturday on Maye Belcher 1 Smyth, a 4,500-ft. wildcat test in McLennan County, Texas. It is located on a block of 1,700 acres lying in McLennan, Limestone and Falls counties, and is in the northeast corner of the W. F. Chapman Survey.

HELMERICH & PAYNE, Tulsa, was rigging up at Herbert Gussman 1 Holmquist, NW NW SW 11-6s-21w, a wildcat in Graham County, Kansas. Location is 3 miles southwest of the Ray pool in Phillips County.

B & R Drilling Co., Russell, Kans., was moving in rotary for Herbert Gussman 1 Russell, NE NE 29-18s-14w. It is a wildcat, located some 6 miles east of the Albert-Otis area of Rush and Barton counties where pre-Cambrian production is found.

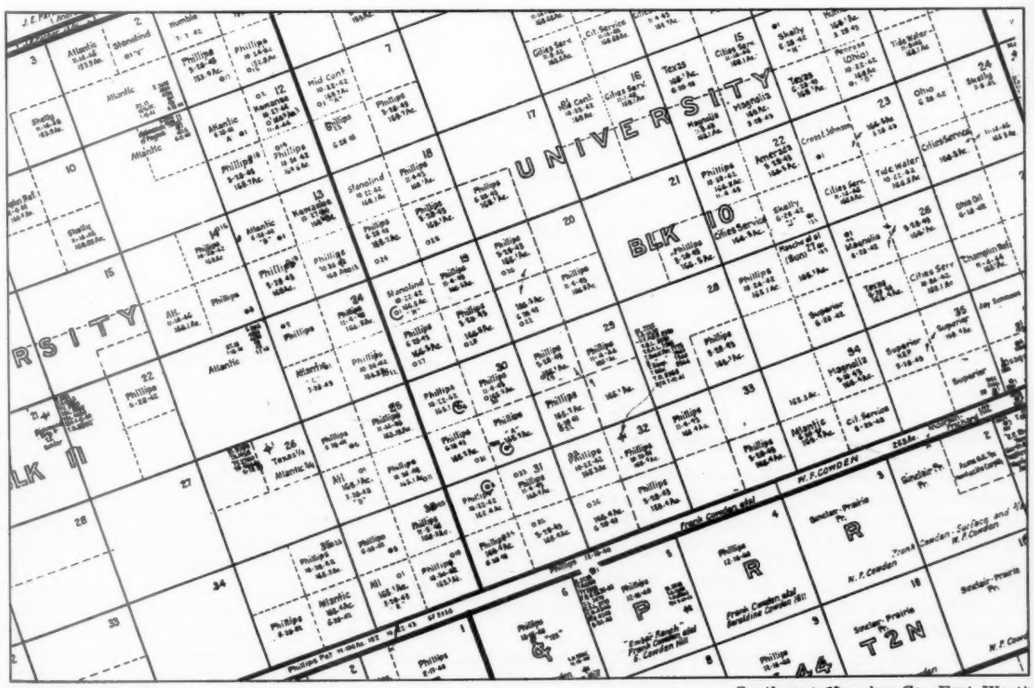
UNION Drilling Co. has the contract to drill Michigan Producers & Refiners, Inc., 1 Oren, C N½ NE NE 27-18n-8w, Osceola County, Michigan.

LUPHER Drilling Co. will drill Louis Rose 1 Becher and Fulmerhouser (Community), in C N½ NW NE 4-17n-10w, in Osceola County, Michigan.

MANNING & MARTIN, drilling concern which is drilling the Dupuyer test the Texas Co. is drilling in Pondera County, Montana, northwest of the Pondera oil field and north of the town of Choteau, has reached the horizon of the basal sands of the Kootenai formation, and has started coring. The test is being drilled for the purpose of establishing a south extension to the Cut Bank sand. The well is on the Wallace Kingsbury farm, in C SE SE 8-29n-7w.

OLSON Drilling Co. has the contract on Sunray Oil Co. et al 1 W. R. Welch, in C NW SE 7-16n-2w, on the west edge of the Guthrie township in Logan County, Oklahoma. Location is a half mile from where Harry Miller drilled a deep disappointment less than a year ago.

JUNE was the biggest month so far this year for oil drilling in Kansas. A total of 87 new wells with a potential production of more than 115,000 bbl. were completed, compared with 53 wells good for little more than 71,000 bbl. in May, and 82 completions for 96,563 bbl. in January, the next biggest month. More than half the completions were in two counties—Reno and Barton. Phillips County came up third.



Southwest Mapping Co., Fort Worth

Current hot spot in West Texas is southwestern Andrews County where Phillips Petroleum Co. last week announced 17 more tests to be added to the operations already under way. While Phillips owns most of the acreage in the area, it is all on short-term leases as shown and much of the drilling is being forced to hold the property. Deep wells seeking Ordovician pay are circled

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Personal Paragraphs

T. W. McSPADDEN, drilling and production engineer, has resigned his position with Delta Drilling Co. of Tyler, Tex., to enter the Army Air Corps. He is now in Officers Training School at Chanute Field, Illinois.

BEN R. NEWBERRY, purchasing agent for Lone Star Gas Co., Dallas, Tex., has been awarded a gold-framed certificate by the National Association of Purchasing Agents in appreciation for his services to that organization.

MAYBEN P. NEWBY, auditor of Skelly Oil Co., has been elected vice president of the Kansas City Control of the Controllers Institute of America.

HARRY EMMRICH, formerly geologist in the Wichita Falls, Tex., office for Magnolia Petroleum Co., is now a first lieutenant in the Army at Lowry field near Denver, Colo.

FRED M. KELLER recently resigned from British American Oil Producing Co. in order to become manager of Oceanic Oil Co., and in his new capacity will maintain offices in Los Angeles, Calif.

ROBERT G. GOUGH, formerly division engineer in the Fort Worth offices of Continental Oil Co. has been made district superintendent for the Texas Panhandle district, and has established his new headquarters at Borger.

GEORGE K. TAGGART, JR., general superintendent of Pantex Oil Co., has moved his company's headquarters from Fort Worth to Taft, Tex., in the Corpus Christi area, establishing both his home and office at the new Taft location.

J. B. ARTHUR, former manager of the Union Oil Co.'s export department, has entered private business in Los Angeles, Calif., and will represent shipping interests particularly in their purchases of fuel oil and other refined oils.

E. L. ADAMS, vice president of General Petroleum Corp., Los Angeles, Calif., who came to the company as a civil engineer and was later in charge of construction work on the company's pipe line from the San Joaquin Valley to Wilmington, recently celebrated his thirtieth anniversary with the company.

CARLISLE HARRELL, clerk at the Wichita, Kans., terminal of Phillips Petroleum Co., has been elected secretary of the company's Safety Club.

H. K. WHITEFORD, vice president of British-American Oil Co., with DR. F. A. GABY, vice president; J. H. TURNPENNY, advertising manager; H. C. ARNOLD and HENRY RAE, flew to Calgary from Tulsa to study oil operations in the Canadian West.

C. D. MILLER, who has been general superintendent of production for Barnsdall Oil Co., Tulsa, has been elected vice president in charge of production for British American Oil Producing Co.

C. D. MILLER

K. W. HALEY

Mr. Miller was with Barnsdall for 15 years, most of them being spent in Tulsa, and the remainder in Kansas. Succeeding Mr. Miller at Barnsdall is K. W. HALEY, who has been chief engineer and assistant superintendent of production. Mr. Haley entered service with Barnsdall in California in 1928, remaining there until 1935, when he was transferred to Pittsburgh, Pa., in charge of the Appalachian area. He came to Oklahoma in 1936 when the Oklahoma City pool was opened and was district superintendent of production there, and later at Wichita Falls and in West Texas. He has been chief engineer since February of this year.

Back from Washington, D. C., are JULIAN L. FOSTER, general superintendent, and C. F. WILSON, superintendent of stores, for the Lone Star Gas Co., at Dallas, Tex.

D. K. BEAVON, process engineer of Texas Co. at the company's Wilmington, Calif., refinery, was married recently in Los Angeles to Miss Virginia Bulpitt.

J. J. FRAWLEY, K.C., of Edmonton, Alta., previously acting deputy chairman of the Alberta Conservation Board, has been appointed chairman, succeeding ROBERT E. ALLEN, who left last year for Washington, D. C.

M. A. GRISHAM, oil operator of Abilene, Tex., revealed on a recent business trip to San Angelo, Tex., that his business associate, L. A. DELANEY, Odessa, Tex., is in Mayo Clinic at Rochester, Minn., recovering from an operation. Mr. Delaney expects to return home next week.

WILLIAM P. ANDREWS, who has been vice president of Douglas Oil & Refining Co., Wilmington, Calif., since construction of the company's refinery started, has resigned and will devote his future time in operation of the Comet Refining Co., of which he is president.

GAY CARROLL, controller of Humble Oil & Refining Co., Houston, Tex., has been elected president of the Houston Control of the Controllers Institute of America. S. G. LOY, assistant controller of Humble Pipe Line Co., was elected a vice president of the local group.

Do You Remember?

From The Oil and Gas Journal Files

35 YEARS AGO

Next month will witness the completion of Gulf Pipe Line Co.'s 8-in. pipe line from the Glenn pool to Sour Lake, Tex., where it joins the 6-in. line, already in operation, to Port Arthur, Tex.

Security Oil Co. has taken up all its gathering lines in the Southeast Texas field and is now engaged in taking up its 6-in. line between Batson and Humble, working from the Batson end.

A windstorm swept the Caddo oil and gas field in Louisiana on July 10. No one was hurt, but several derricks were blown down and many trees were snapped off close to the ground.

25 YEARS AGO

Drumright, Okla., noted as a wide-open town, is much exercised over the discovery that out of a $20,000 park bond issue, $18,000 has been spent very mysteriously. Fraud charges have been made against those in authority.

Jitney car service in the Oklahoma oil fields is being increased in scope and efficiency and is a means of convenient transportation for oil men. In the Broken Arrow, Jenks, and Bixby districts, five lines of cars are in operation.

Use of vacuum oil pumps in Oklahoma wells is specifically prohibited by new rules of the conservation bureau, unless permission is granted by the Corporation Commission.

15 YEARS AGO

The largest program of pipe-line building ever conceived was either closed or started in the first half of this year.

The oil industry made history during the first half of 1927. And that is about all it did make. With the highest rate of consumption on record, it was getting and is still getting the lowest prices for gasoline of any 6-month period since 1914-1915.

A proposal that production of the Greater Seminole area in Oklahoma be curtailed was made at a meeting of operators of that section held in Tulsa this week. Only two companies refused to agree to a proration of production.

R. J. MAY, attorney for Shell Oil Co., Inc., Tulsa, discussed "The Engineer as an Expert Witness" at the luncheon meeting of the Engineers' Club on Monday.

BILL LANE, production superintendent for Plymouth Oil Co., has moved from Midland to Brownfield, Tex., where he had been stationed some 3 years.

WILLIAM L. NAYLOR, assistant controller of Gulf Oil Corp., has been elected a vice president of the Pittsburgh Control of the Controllers Institute of America.

D. W. REEVES, industrial sales manager for Oklahoma Natural Gas Co., Tulsa, has left for Dallas, Tex., to be commissioned a major in the Army. He has been granted a leave of absence by the company.

JOSEPH M. GREEN, attorney for Barnsdall Oil Co., Tulsa, and VERNON HAHN, clerk at Barnsdall, were injured in an automobile accident in Tulsa last week, that took the life of one man and injured several others.

J. ELLIS CLEGG has assumed new duties as head of the plant-protection department of the Baytown, Tex., refinery of Humble Oil & Refining Co. Mr. Clegg is a former special agent of the Federal Bureau of Investigation.

FRED S. WHITAKER, president, Omar Refining Co., Garber, Okla., who left West Point to enter the first World War, has left for active service at Fort George Wright, Spokane, Wash. He has been commissioned a major in the Army Air Force.

THOMAS BROWNFIELD, liaison officer at New York City for Carter Oil Co. and Standard Oil Co. of New Jersey, was a visitor in Tulsa, his former home, last week. Mr. Brownfield was manager of the scouting and statistical department at Carter for several years.

W. L. JAMES has resumed his duties as purchasing agent for Stanolind Oil & Gas Co. at Tulsa. He has been in Washington, D. C., as a dollar-a-year man since last September. He was first assigned as a purchasing consultant in WPB, and later promoted to assistant director in charge of procurement specialties.

Subs His Specialty

One of four brothers now operating the Danciger Oil & Refining Co., Jack Danciger of Fort Worth, Tex., vice president and assistant secretary of the company, has recently come into the national spotlight, not as an oil man but as spearhead of a group of private citizens trying to "do something" about the submarine warfare on the Atlantic and Gulf coasts. Mr. Danciger and his friends (including brother Joe, also of Fort Worth) have just met with some success in a 4-month effort to persuade the U. S. Navy to use small motor boats (about 36 ft.) for offshore patrol.

JACK DANCIGER

Brimming with enthusiasm for the proposal, Mr. Danciger says he is merely putting into action his belief that every man in the country should find some way to make a personal contribution to the war effort. In order that he will not shirk his responsibilities as an oil man in the war effort, he divides his time by "stopping the oil business at 5 o'clock." From 5 p.m. to 1 a.m. he is busy with boat builders, congressmen, and public spirited citizens working out plans for a small-boat patrol that will satisfy the Navy as being an effective antisubmarine weapon.

No newcomer to wartime work, he served during the last war as Kansas director of the Oil Division of the U. S. Fuel Administration when the watchword was "Bring the most oil to the surface with the least expenditure of men and materials." At that time he lived in Kansas City, Mo., where the Danciger company was organized in 1908.

Mr. Danciger and his brothers came to Kansas City from Taos, N. M., where he was born and raised. Until he was 18 years old he could speak no English—only Spanish, and the language used by the Pueblo Indians who came to his father's trading posts. He and his brothers were first in the brewery business at Kansas City, but soon went into oil in the early booms of eastern Oklahoma and Kansas. In addition to his war work and business, Mr. Danciger is consul for the Dominican Republic and honorary consul for the Republic of Mexico and is an ardent "Good Neighbor."

He is married and has one daughter.

ROBERT T. WALKER, Graham, Tex., an independent operator, has been named president of the Graham Lions Club.

CLIFFORD HANCOCK was recently elected vice president in charge of sales in the southern division of the Caminol Co., California refiner and marketer.

KILBURN ADAMS, geologist of Texas Co. at Tulsa, has taken a leave of absence to go to Lamesa, Tex., to direct a glider pilot school there for the Government.

MILTON H. SCALES, of Los Angeles, Calif., has been retained to look after production for Vermilion Consolidated Oils, Ltd., in the Vermilion field of Alberta.

J. S. BURROWS, manager of the marine department, Humble Oil & Refining Co., Houston, Tex., has been elected president of the Propeller Club, an organization composed of barge and ship operators.

W. H. STUEVE, head of the oil-industry power sales division of Oklahoma Gas and Electric Co., Oklahoma City, Okla., has left for Little Rock, Ark., to become power consultant for the War Emergency Pipe Line, Inc.

CECIL A. HAMMAN, field engineer for Ohio Oil Co. at Yates pool, Iraan, Tex., a former reserve officer, has been ordered to active duty as a first lieutenant in the ordnance department, at the U. S. Proving Grounds, Aberdeen, Md.

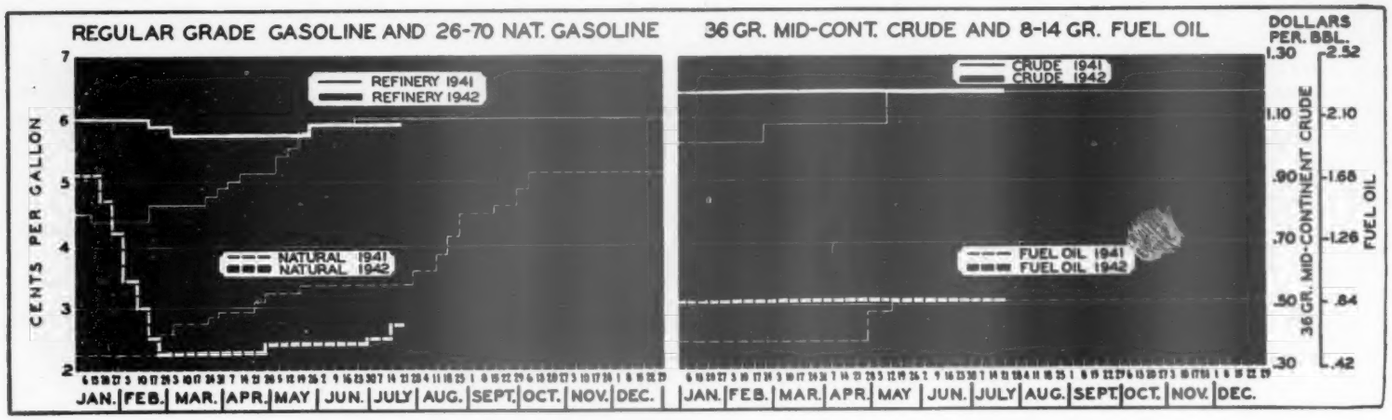
JACK HELLINGHAUSEN, son of H. P. HELLINGHAUSEN, secretary of Oklahoma Pipe Line Co., has moved from Breckenridge, Tex., to Tulsa, where he has accepted a position with Atlantic Refining Co. He is a graduate of the University of Tulsa engineering school.

ROY S. BONSIB, New York City, chief safety inspector, Standard Oil Co. (N. J.), was in Tulsa last week on an inspection tour of Mid-Continent properties of Standard subsidiary and affiliated companies. He was accompanied by J. D. McCAMEY, Carter Oil Co. safety engineer in a visit to producing and pipe-line operations in Oklahoma, Louisiana, Missouri and Illinois.

JOHN L. (JACK) DELLINGER has been appointed regional conservation manager for the War Production Board, and has established his headquarters at Dallas, Tex., having resigned his former position as manager of Etexas Producers Gas Co. at Tyler, Tex. During the last war Mr. Dellinger served in France as captain of the Fifteenth Field Artillery, Second Division. He is well known throughout the oil industry, with which he has been identified since 1919. During most of this time he served in Mexico and the Mid-Continent fields as an official of Shell Oil Co., Inc.

Shifts: RICHARD STORM, engineer, Sinclair Prairie Oil Co., Odessa to Houston, Tex.; JOHN M. PALMER, engineer, Shell Oil Co., Inc., Midland, Tex., to White Castle, La.; H. C. TALLEY, engineer, Texas Co., Odessa to Seminole, Tex.; J. F. DARBY, president, Darby Lynde Co., Muskogee, Okla., to Colorado Springs, Colo.; E. W. JOHNSON, geologist, Ohio Oil Co., Falls City, Neb., to Arlington, Va.; R. BUNCH, superintendent, Sun Oil Co., Tyler to Falfurrias, Tex.; J. H. POTEET, geologist, Texas Co., Lawrenceville, Ill., to Evansville, Ind.; W. R. LAM, engineer, Texas Pacific Coal & Oil Co., Lubbock to Plainview, Tex.; C. C. BROOKS, geologist, Seismograph Service Corp., Holdenville to Tulsa, Okla.

Eight members of the Fort Worth, Tex., Geological Society have received certificates of completion in a course in Interpretation of Aerial Photography, conducted by the University of Oklahoma at Norman, Okla. The course was sponsored by Prof. F. H. Melton of the university school of geology and comprised over 40 hours of class instruction at Norman. Those completing the course included J. B. LOVEJOY, GORDON FISHER, W. B. WATSON, W. J. HILSEWECK, and Ensign HAROLD McCLURE, U.S.N.R., all of the Gulf Oil Corp.; ROBERT IMBT and RALPH CUMMINS, consultant geologists, and S. H. CASTEEL, Landreth Corp.



MARKET DEVELOPMENTS . . .

East Coast

NEW YORK.—In spite of the confusion caused by the indecision in Washington over the question of price increases or subsidies, current demand for oil products in the East Coast district continues in excess of supplies. The possibility that the recently authorized price increases may be rescinded and that they may be replaced with a war-compensation program abruptly stopped almost all forward buying. With the amount involved ranging from 2 to 2.5 cents per gallon, it is obvious that whether or not the price increases will be retained is a matter of real concern for both buyers and sellers.

Some relief in one form or another must be forthcoming for the oil companies cannot continue to bring in fuel oil and gasoline at a loss indefinitely. If the increases are rescinded without some form of subsidy being adopted, imports from Districts 2 and 3 into District 1 will decline and the already unsatisfactory stock situation in the latter would become rapidly worse.

Despite the fact that the summer season, when fuel-oil stocks are normally built up, is almost half gone, no additions to storage of consequence have been made since April. If this condition is not corrected before fall, prospects for the winter will be very dark. Shipments may be able to meet ordinary demands but without a substantial volume of backlog storage, it would be impossible to meet the demands of sharp and protracted cold spell.

Gulf Coast

HOUSTON, Tex.—Kerosene, gas oil and fuel oil continued in good demand this week although sales still are limited to the ability of buyers or sellers to supply transportation. Buyers are on hand for all material which can be moved and ceiling prices prevail for all these products.

The gasoline situation, however, displayed increasing confusion with material being offered below ceiling prices. Most gasolines, regardless of grade or quality, are being quoted at 5.5 cents. The slight variations in price usually are based on whether the buyer or seller is able to provide the means of moving the material. Grades are becoming less and less significant as a price consideration, and often gasoline with high sulfur content brings as much as a sweet material.

Difficulty of disposing of gasoline, which has shown a tendency to pile up on the coast, is leading some sellers to require that gas oil buyers take from two to three cars of gasoline for every car of gas oil.

Shipping, particularly so far as tankers are concerned, continues erratic, with no assurances of when or how many cars, barges or tankers will be available. This week there have been very few tankers in port while the previous week there were so many it was difficult to accommodate all of them in the time they had to be loaded.

Approximately 300,000 bbl. of gas oil were reported sold out of Corpus Christi, Tex., for tanker movement. A sale of 20 cars of kerosene also was made. There also was a sale of 25 cars of 78-octane gasoline.

SENTENCE SUMMARIES

MID-CONTINENT: Natural-gasoline prices advance 0.125 cent on strength of higher demand from Middle West refiners and jobbers.

EAST COAST: Government defrayment of higher tank-car costs may cause cancellation of June 29 product advances.

GULF COAST: Several cargoes of light and medium fuels loaded. Motor-fuel prices and demand remain variable.

PENNSYLVANIA: All products steady at ceiling levels. Demand keeps refiners under pressure to satisfy customers.

PACIFIC COAST: Residual fuel strongest product. Conditions indicate higher prices may be authorized. Supply diminishing.

Mid-Continent

STRONG prices, insistent inquiries and comparatively scarce stocks continued this week to characterize the Mid-Continent refinery market. Midsummer temperatures, the vacation season and continued increases in demand from large industrial consumers were factors influencing refinery product market trends. Natural-gasoline prices are up 0.125 cent per gallon both in the Oklahoma (Group 3) and Texas markets.

Light fuel oils are particularly strong considering that this is the season of lowest consumption. Part of the current buying interest is indicative of advanced buying for next winter's requirements. Buyers are combing the Mid-Continent refinery district for distillate fuels for railroad shipment to the East Coast. Most of the buyers report material is extremely difficult to find. The few refiners with more than sufficient material to meet current requirements are unwilling to sell on the spot market. There is evidence in the tone of refinery resistance to distillate inquiries that manufacturers anticipate higher prices in the fall and winter. The attitude is that there is nothing to lose by waiting on developments. Storage facilities are adequate to handle current production even though the interior consumption is now substantially below cold-weather peaks.

Motor-fuel demand is lagging behind current production by 1,500,000 bbl. per week, despite lower rates of consumption that prevail in most of the large consuming states. Gasoline yields from the nation's refineries are currently running about 6 per cent below the rates prevailing a year ago and additional pressure is being exerted by federal officials to make even more substantial reductions. Numerous refiners have reduced their gasoline yields as much as 20 per cent.

A.P.I. REFINERY REPORT

Week Ended July 11, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks		
		Gasoline	Residual	Gas oil
Appalachian	160	2,741	528	567
Ind., Ill., Ky.	762	16,131	3,447	4,041
Okla., Kans., Mo.	385	7,645	1,470	1,375
Censored group*	1,563	40,642	17,073	16,052
Rockies	100	2,307	555	365
California	612	16,192	54,818	12,018
Total July 11, 1942	3,582	85,658	77,891	34,418
Total July 4, 1942	3,551	87,014	76,903	33,520
Total July 12, 1941	4,103	87,922	90,914	39,849

Note: Refinery runs and stocks for week ended July 18, 1942, appear on Trends page.

*Reports combined on East Coast, Gulf Coast, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
July 11, 1942	251,311,000
July 4, 1942	253,280,000
July 12, 1941	255,567,000

*Excludes heavy, unrefinable stocks in California.

Pacific Coast

LOS ANGELES, Calif.—Limited sales of gasoline moved this week in a narrow range of prices.

If unrestricted by ceilings, fuel-oil prices would be substantially higher on the Pacific Coast. This is a seller's market with stocks consistently reduced each month. Present low prices reflect competitive action 2 years ago when one company took some business from another. Demand for fuel oil is expected to show approximately 10 per cent gain in 1943 although it may be higher.

Demand for gas oil and diesel fuel is sliding off slightly but considerable distillate will be used to blend with residuals to meet Navy specifications during present fiscal year.

Suggestions to reduce operations of cracking stills in order to produce more fuel oil and to reduce gasoline production are not meeting with much response but this may be the answer to part of the problem although such action might reduce gas production from stills. In addition to reduced stream time on cracking units it has been recommended that more selection be made in the type of crude oil processed.

REFINERY AND TANK-WAGON PRICES

(Prices as of July 21)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*				5.625-5.750		5.250-5.375	4.875-5.000
Pennsylvania			6.750-7.000				
Gulf Coast‡	6.00-6.50			§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	12.200			11.700	11.700		
Pacific Coast		6.750-7.000	6.500-6.750	6.375-6.500	6.000-6.375	5.500-5.750	5.000-5.125

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	2.750	3.250	
North Texas	2.375	2.750	
North Louisiana	2.500	2.625	
California			5.000-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*			4.500-4.750	4.375-4.625	
North Louisiana				4.500-4.750	
Pennsylvania	6.250	6.125-6.250			
California				4.500-5.500	4.250
Northeast Coast				7.700	
Gulf Coast				3.875	

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125					
California		2.750-4.000			‡$1.35-1.45	$0.85-0.90
Gulf Coast			4.000	4.125	1.45	0.85
Northeast Coast				7.800	2.222	1.80
North Louisiana						†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.500-3.625	3.375-3.500	$0.85	$0.85
Pennsylvania (West)	5.625-5.875	5.375-5.875	†5.250-5.500	
Northeast Coast	7.8	7.8	1.85	1.80
Pacific Coast	5.5	5.5	†0.80-95	§0.80
Gulf Coast	3.875-4.0		1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oil

CALIFORNIA		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		38.50
10 pour point		37.50
15 pour point		36.50
25 pour point		31.00
200 vis., at 70° F., 3 color:		
Zero pour point		40.50
10 pour point		39.50
15 pour point		38.50
25 pour point		33.00

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.350-4.550
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	6.250
133-135 (A.m.p.) wax	6.550
Crude scale:	
124-126 (A.m.p.) w.s.	4.350-4.455
124-126 (A.m.p.) y.s.	4.350-4.455

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast		6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250	.....	4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30			†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8	.....	28.8	24.8	.....
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	17.55	5.50	11.10
Boston, Mass.	17.00	4.50	10.40
Burlington, Vt.	19.00	5.50	...
Buffalo, N. Y.	18.30	5.50	11.20
Dover, Del.	18.80	5.50	12.80
Hartford Conn.	17.70	4.50	...
Manchester, N. H.	19.40	5.50	11.40
Newark, N. J.	16.80	4.50	10.30
New York, N. Y.	18.20	5.50	10.40
Philadelphia, Pa.	18.30	5.50	12.55
Pittsburgh, Pa.	18.80	5.50	12.90
Portland, Me.	18.40	5.50	10.50
Providence, R. I.	17.10	4.50	10.20
Washington, D. C.	16.80	3.50	11.60
Average 14 cities	18.01	5.07	11.28

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero tank wag.
Chicago, Ill.	14.10	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	11.90	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.03	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	21.50	7.50	11.40
Birmingham, Ala.	23.10	8.50	11.00
Charleston, S. C.	21.05	7.50	...
Charleston, W. Va.	21.35	6.50	11.90
Charlotte, N. C.	22.20	7.50	11.90
Jacksonville, Fla.	21.50	8.50	10.40
Jackson, Miss.	18.00	7.50	8.50
Louisville, Ky.	17.00	6.50	8.50
Memphis, Tenn.	17.75	8.50	10.50
New Orleans, La.	17.25	8.50	*10.00
Norfolk, Va.	19.45	6.50	12.60
Average 11 cities	19.92	7.59	10.67

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	17.42	5.96	11.02
Average last week	17.42	5.96	11.02

Canadian Fields

(Continued from Page 69)

sump as well as expansion of its processing plant.

Drillers for Fort Norman

A group of Turner Valley drillers left recently for Fort Norman where they will be employed by Northwest Co., Imperial subsidiary, in drilling operations. Contracts are for periods of 1 to 2 years. Several crews left for the north by plane some weeks ago, and considerable drilling equipment was moved in at the opening of navigation. No information has been made public as to the number of wells contemplated in this year's program, but the field, which produces from shallow horizons, around 1,025 ft., will be given a thorough test.

Saskatchewan Drilling

In Southeast Saskatchewan, Bobjo Mines, testing a concession extending 100 miles west from the Manitoba boundary and around 60 miles north and south, is below 2,000 ft. with its first well and has encountered some oil indications. Production test will be made. Farther west, in southern Saskatchewan, Northwest Co.-Radville 1, LSD 16, 36-5-19w2, has finished a fishing job and is below 5,379 ft., with limestone at 4,961 ft.

Crude-Oil Prices

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	3.00

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas*
18-18.9	$0.80			
19-19.9	.84		$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9		1.07	1.30	.94
32-32.9		1.09	1.32	.96
33-33.9		1.11	1.34	.98
34-34.9		1.13	1.36	1.00
35-35.9		1.15	1.38	1.02
36-36.9		1.17	1.40	1.04
37-37.9		1.19	1.42	1.06
38-38.9		1.21	1.44	1.08
39-39.9		1.23	1.46	1.10
40 and above		1.25	1.48	1.12

*Includes Lea County, New Mexico.

EQUIPMENT PROGRESS...

Robberson Steel Co. Successor to J. B. Klein Iron & Foundry Co.

Announcement has been made of a new firm to succeed J. B. Klein Iron & Foundry Co., Oklahoma City, Okla. The Klein company was first established in 1909 by J. B. Klein, who died in 1925. In the Robberson Steel Co., successor to J. B. Klein Iron & Foundry Co., the management, personnel, and capital structure remain unchanged. Richard W. Robberson is president and general manager of the company. William Klein is vice president, and P. B. Robberson is secretary-treasurer. The plan is located at 1401 N.W. Third Street, Oklahoma City. The plant serves the building, bridge, and road industries.

TRADE LITERATURE

WILSON CHEMICAL FEEDERS, INC., Buffalo, N. Y.—A four-page bulletin on Pulsafeeder, for the control of liquid chemicals. Seven types of Pulsafeeders are illustrated, along with a list of outstanding uses.

W. H. & L. D. BETZ, Philadelphia, Pa.—A technical book entitled "Water Handbook," which is concerned with the chemical control of industrial and municipal waters. The book is spiral bound, and is 64 pages. Water analyses are discussed, with procedures and calculations. Also, interpretations of tests, and their application to plant control are treated. The book is illustrated with graphs and illustrations of pieces of testing equipment. Copy of the book will be sent postpaid upon payment of 50 cents per copy to the company, Gillingham and Worth Streets, Frankford, Philadelphia, Pa.

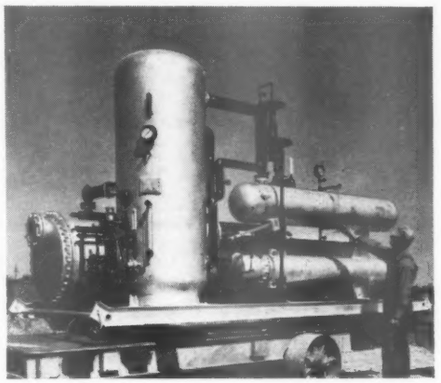
ELASTIC STOP NUT CORP., Union, N. J.—Bulletin announcing reductions in prices of 415 items of anchor, gang-channel, and instrument-mounting types of elastic stop nuts. The newly reduced prices became effective July 1, and apply to the unshipped portions of all open orders, as well as on new orders.

ALLIS-CHALMERS CO., Milwaukee, Wis.—An entirely new kind of maintenance handbook—"A Guide to Wartime Care of Electric Motors." The instructions apply to all kinds of standard, general-purpose motors. The handbook clarifies the overall problems of motor care, treating separately each factor opposing long and trouble-free life. Illustrations are idea pictures drawn in cartoon style. Copies are free upon application to the company's advertising department.

Ventilation for Blackout Plants

Allen Corp., 9751 Erwin Avenue, Detroit, Mich., announces an integrally built roof fan complete in every detail whose installation is accomplished by securing to the roof over an opening made to the size of the fan housing and connecting electrically. This new Type "H" roof fan is made in sizes 30 in. to 60 in. with a capacity range of 5,600 to 45,000 cu. ft. per minute. The V-belt-driven multiple blade fan wheel has a large area requiring comparatively small motors to give these exceptional capacities. The fan and motor are easily accessible for oiling and inspection from the roof. By merely removing the two end bolts, the hood lifts easily as the two remaining bolts act as hinges.

Black, Sivalls & Bryson Will Manufacture Fuel Vaporizer



To produce fuel for pipe-line engines at an indefinitely low cost, Black, Sivalls & Bryson, Inc., Oklahoma City, Okla., recently announced that they would manufacture and distribute the BS&B Fuel Vaporizer, which automatically strips enough gas out of the pumped crude to run pumping engines.

Where no natural gas is available, or wherever fuel economy is desired, the fuel vaporizer enables operators to pump with gas engines. According to the manufacturers, all pumping fuel costs can be reduced, and the expense of diesel fuel and its transportation can be eliminated by converting diesel engines to gas. Also, loss of crude gravity can hardly be noticed.

In operation, the fuel vaporizer takes a small stream of crude from the discharge of the pipe-line pump. This crude is routed through the vaporizer, where the pressure is reduced. Next, the flow passes through a heat exchanger, and then through a tubular exhaust gas heater into a flash tower where a bit of gas is "topped off." This gas is conducted to a storage receiver and drip, then delivered through a regulator to the fuel system of the engine. Exhaust gases furnish the heat for the generator.

Cold engines can be started with the gasoline which accumulates in the drip. The "topped" crude is cooled back through the heat exchanger and delivered into the pipe line downstream from the pump.

An example of the efficiency of the BS&B fuel vaporizer can be found in the following example taken from an installation now in operation. The vaporizer generates all the gas required to run two 150-hp. engines pumping 13,500 bbl. of crude per day. Five-eighths of 1 per cent (83.8 bbl. per day) of the crude is shunted through the vaporizer which gassified 10.4 bbl. (12.4 per cent) of it for fuel. With crude at 77 cents per barrel the cost per month for fuel is $240. Former cost per month with purchased gas was $430.

The fuel vaporizer is manufactured by BS&B ready for installation and operation, complete with regulators, meters, etc., and is mounted on skids.

McCULLOUGH TOOL CO. OCCUPIES NEW SHOP AND OFFICE BUILDING

A spacious new shop and office building now houses the Los Angeles, Calif., headquarters of the McCullough Tool Co. Located at 5820 South Alameda St., at Slauson Avenue, the new plant is adjoined by a large parking yard and service area.

The building is 60 by 200 ft., of reinforced-concrete construction, with offices at the front and the machine shop occupying the rear. The engineering department and laboratory are situated on a mezzanine floor above the offices.

Both the shop and offices are air conditioned and are provided with fluorescent lighting. Large windows are in all walls, and a newly developed type of roof structure provides excellent overhead lighting during the day.

Guiberson Aircraft Diesel Engine Cited by Ordnance Department

America's first mass-produced aircraft diesel engine has been cited for driving American made tanks to victory over Axis mechanized forces in the Libyan campaign. Major General Campbell, chief of ordnance of the U. S. Army, made the announcement in a telegram to Guiberson Diesel Engine Co. of Texas. Guiberson aircraft-type diesels were the only United States engines of their kind readily available for combat when British and American orders came through. Their proven sturdiness and efficiency made them ideal to power the big land battleships.

Tubeless Tire Announced By B. F. Goodrich Co.

Invention of a revolutionary heavy-vehicle tubeless tire—the goal of tire engineers for half a century—has been announced by John L. Collyer, president of B. F. Goodrich Co., Akron, Ohio.

The new invention is of primary importance because of the savings it makes possible in rubber ordinarily required for inner tubes and flaps, Mr. Collyer said. He added that the use of a specially designed locking member which retains the air in the casing is the secret of the new development.

In making the first public announcement of the new tire advance, it was stated that already substantial test results obtained by the company demonstrate its usefulness and ability to perform under all sorts of difficult road conditions.

It is emphasized that the new device can be mounted in a tire with ease in a procedure which is simple to learn and requires no special tools. In the event the tire is cut or otherwise becomes deflated, valuable time can be saved in repairs as there is no inner tube to be patched or replaced.

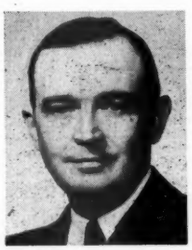
While the amount of rubber saved by the new invention varies depending upon the size of the tire, it is estimated that at a minimum the saving was approximately 7 per cent of the rubber content of the conventional casing, tube, and flap ensemble.

AMONG EQUIPMENT MEN...

N. A. Endicott Appointed General Sales Manager Continental Supply

Continental Supply Co. has appointed N. A. Endicott as sales manager, effective as of July 1. Mr. Endicott, who will make his headquarters in Dallas, Tex., is a veteran oil-field supply man. Except for a short time out to serve in the Army during World War I, he has been with Continental for 26 years. He was vice president of Continental Supply Co., Ltd., in Canada from 1929 to 1935 and has been active in the supply business in most of the country's major fields.

New General Manager of Luber-Finer, Inc.



William J. Denning, newly appointed general manager of Luber-Finer, Inc., Los Angeles, Calif., brings to this manufacturing firm of oil filters a background of 25 years' experience in manufacturing, engineering and merchandising. Mr. Denning, a member of the Society of Automotive Engineers, has been general manager of the Do-Ray Lamp Co., Chicago, Ill., for the past 12 years.

Timken Advertising Department Promotions Are Announced

The following promotions in the publicity and advertising department of the Timken Roller Bearing Co. have been announced by Roland P. Kelley, director of advertising and sales promotion.

Worthing H. Stone becomes assistant advertising manager and is to be in charge of advertising for the railroad, farm implement, automotive and rock-bit divisions of the company. A graduate of Oberlin College, Mr. Stone went with the company in 1936 as manager of the Timken roller bearing exhibit at the Great Lakes Exposition in Cleveland, after which he become associated with the company's sales promotion work, specializing in the supplying of cooperative information both to Timken customers and to general industry.

S. L. Huffman, a member of the advertising staff for several years, has been advanced to manager of the news bureau where he will be responsible both for general publicity and technical articles for the industrial press, in addition to continuing his present duties of handling the advertising of the steel and tube division. He graduated from Marion College in 1929 and after taking graduate work in science at Indiana University spent several years in newspaper work, joining the Timken organization in 1939.

Peter C. Poss continues his present activities as assistant advertising manager, supervising the buying of publication space and printing; and in addition will take over the publishing of technical information for the engineering fraternity, an activity which the company plans to expand considerably in cooperation with the war effort.

R. M. Cook Heads Sales for McCullough Tool Co.

R. M. (Bob) Cook, formerly vice president of International Cementers, Inc., has joined McCullough Tool Co., Los Angeles, Calif., where he will be in charge of sales. Bob Cook is widely known in oil-field circles throughout the United States, for his activities have taken him into practically every active drilling and producing area for many years. He started in the oil-tool business in the early days of the development of the Coalinga area, and was subsequently connected with Byron Jackson Co. and Pacific Cementing Co. While Mr. Cook will make his headquarters at Los Angeles for the present, he will spend much of his time in the districts served by the 16 McCullough branch offices.

McCullough Tool Co. manufactures and operates electrically and mechanically fired gun perforators, oil-well fishing tools and specialties.

Livingston Released by Monsanto To Serve Rubber Reserve Co.

Release of John W. Livingston to the Rubber Reserve Co., which he will join as consulting engineer, has been announced by Monsanto Chemical Co. Preparatory to becoming active in the Rubber Reserve Co., which is the federal agency dealing with the provision of facilities for synthetic-rubber production, Mr. Livingston submitted his resignation as a vice president and member of the board of directors of Monsanto and as general manager of its Organic Chemicals Division.

A resident of St. Louis, Mo., Mr. Livingston will transfer his quarters to Washington, D. C., where the Rubber Reserve Co. has its headquarters.

Prominent for years in the research, chemical engineering, and production fields of the chemical industry, Mr. Livingston is recognized as an authority in the manufacture of organic chemicals.

In 1925 he joined Monsanto Chemical Co. at its headquarters in St. Louis as assistant technical director, shortly thereafter becoming manager of the St. Louis plant. In 1929 he was elected vice president in charge of manufacture.

Bonner Named Treasurer Of Pomona Pump Co.

C. Granniss Bonner, formerly comptroller and more recently treasurer of Brunswick-Balke-Collender Co., Chicago, Ill., has been elected treasurer of Pomona Pump Co., Pomona, Calif. Mr. Bonner relieves Donald C. McKenna, vice president, and former treasurer, who will devote full time to the increasing production activities of the company's four manufacturing plants. Pomona Pump Co. is not only producing pumps for every direct and associated war effort, but also has undertaken a heavy schedule of marine engine and maritime fittings manufacture. Mr. Bonner is 45, a graduate of Swarthmore College with A.B. and M.E. degrees, a Phi Delta Theta and a member of the Controllers Institute of America.

C. GRANNISS BONNER

Mortenson Chief Electrical Engineer Of Allis-Chalmers Plants

S. H. Mortensen, engineer-in-charge of A-C design for 10 years, has been appointed chief electrical engineer of the Allis-Chalmers Manufacturing Co. plants at West Allis, Wis.; Cincinnati, Ohio; Boston, Mass.; and Pittsburgh, Pa.

Starting at the Allis-Chalmers Norwood works in 1905, Mr. Mortensen transferred to Milwaukee as an electrical draftsman 3 years later. There he successively became design engineer for D-C machines, design engineer of rotating synchronous machines, and in 1932 engineer-in-charge of alternating current design.

Mr. Mortensen was born in Denmark, studying in Europe before coming to America. He has been responsible for pioneer work in the development of self-starting synchronous motors, synchronous condensers and turbogenerators. In addition to contributing numerous articles and papers on electrical operation and design to the leading professional papers, he has been the author of a textbook on Motor and Generator Design, and more recently a coauthor of the Standard Handbook for Electrical Engineers.

He is a fellow of the A.I.E.E., a member and former director of Engineers Society of Milwaukee, and the Allis-Chalmers representative for the Edison Electrical Institute.

Berninghaus Heads Sales of Organic Chemicals for Monsanto

Promotion of Julius A. Berninghaus, general manager of sales of the Organic Chemicals Division of Monsanto Chemical Co., to general manager of the division has been announced by Edgar M. Queeny, president.

The Organic Chemicals Division is Monsanto's largest division. It has plants in St. Louis, Mo.; Monsanto, Ill.; Nitro, W. Va.; and Norfolk, Va., and research laboratories in St. Louis, Nitro, and Akron, Ohio.

He succeeds John W. Livingston, who resigned to become consulting engineer to the Rubber Reserve Co., the federal agency dealing with the provision of facilities for synthetic-rubber production.

Mr. Berninghaus joined Monsanto Chemical Co. in 1926 as a departmental sales manager, becoming general manager of sales in 1929. In 1939 when the company was set up along divisional lines he became ranking sales executive of the Organic Chemicals Division and senior sales executive of the company. He lives on a farm near Valley Park, Mo., west of St. Louis.

Price Represents Murphy Diesel Co. in Mid-Continent Field

Harley T. Price, 412 West Fourth Street, Tulsa, is a direct factory representative of Murphy Diesel Engine Co., Milwaukee, Wis., in the Mid-Continent oil fields. He is prepared to give full sales and engineering assistance on oil-field problems pertaining to the company's engine applications.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years' Experience
Inquiries Invited

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

U. S. OIL rights can be filed for lease developing area. Want several join filing block. Small expense. Box B-187, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and Gas leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Ky.

OIL LEASES for sale in Dakota pool. Major companies now drilling. Prices and information. Write J. A. Charles, 232 E. 14th, Tulsa, Okla.

WILL sell interest thousand acres under lease, new field Penna. crude. Analysis run high cylinder content and wax distillate 45%. Inquire, F. S. Armstrong. Youngwood, Pa.

I OWN 17,240 acres of land at Guin, Ala. I would like to give an oil, gas and mineral lease to some one financially able to pay the rental on same. If I could get a good oil lease I would hold the land for the purpose of growing timber. H. H. Maschmeyer, 74 St. Francis St., Mobile, Ala.

OPERATORS: 4000 acres R. M. area Dome, fully geologized, want drilled, will farm with bottom hole money. Box B-186, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Competent individual or Company to drill test well on a leased tract of 12,000 acres, located in Saline Co., Southeastern Nebraska. Said tract borders the Nemaha Ridge on the West, and in the Salina series. Will give acreage for completed well. Lease form Producers 88, rental free. Kable & Wagner, P. O. Box 114, Friend, Nebr.

FOR SALE: 1200 acres oil and gas leases and test well showing considerable gas at 3,208 feet. Come see for yourself. Reason for selling, ill health. See, J. F. Russell, Rural Route 1, Austin, Ark.

PARTNER Wanted in 52190 acre solid block wildcat lease for development. Box B-182, The Oil and Gas Journal, Tulsa, Okla.

—STRUCTURE GOOD GEOLOGY—
2800 acres commercial oil and gas leases for sale, Sub, lease, or drilling agreement located in townships three and four, range fourteen west, Smith County, Kansas. Address P. O. Box 232, Smith Center, Kansas.

FOR SALE: Gas properties, average annual gross revenue, past three years, approximately $10,000.00. For particulars address P. O. Box 388, Mannington, W. Va.

Leases and Drilling Blocks

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

FOR SALE—Landowner's Royalty under 160 acres leased to Humble Oil & Ref. Co. in Lea County, N. M., 27 pools in the county. Will sell in small interests. HARRY S. WRIGHT, FARMINGTON, NEW MEXICO.

WE MAINTAIN A MARKET FOR
REGISTERED DEALERS
IN ALL TYPES OF OIL ROYALTIES.

FIRST DEPENDABLE OIL CORP.
522 Fifth Ave., New York, N. Y.

FOR SALE: 25 acres good Oklahoma Royalty, excellent possibilities, leased to major company. Box 618, Great Bend, Kansas.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

OUT OF 5000 American financial houses only 223 bought small issues last few years. The 223 names $4.00. JOHN F. MORRIS, Box 5411, Philadelphia.

Incorporation

DELAWARE CHARTERS: Complete service $35, Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Help Wanted

NOTICE TO ADVERTISERS

Advertisers offering positions to workers skilled in critical war industries are requested by the War Manpower Commission to include the following sentence in their advertisement:

"Applications from those now employed in war industries will not be considered."

CHEMIST or Chemical Engineer: B.S. or M.S. Degree; previous petroleum refining or laboratory experience preferred. Reply must list personal and other pertinent data including starting salary. Box B-183, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

WANTED: Affiliation with company interested in present or postwar foreign operations. 15 years' experience all phases European marketing, transportation, etc. Perfect knowledge French, German, some Spanish, Italian. Box B-184, The Oil and Gas Journal, Tulsa, Okla.

SQUAD of Engineers Capable of handling Design and Drafting on Power Plants, Chemical or Refiners. Wish employment as a group. Box B-193, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Job by first class production man, wide experience in producing, drilling and leasing, reference. Address Box B-191, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED: Man with years of training in both accounting and production open for position to supervise both of these departments. Excellent references. Box B-190, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Position with permanent location, as Geologist—Seismologist. B. S. and grad. work in geology, 8 years' exp. in geology and seismology. Age 33, Class 3-A, now employed. Will furnish detail information upon request. Inquire Box B-194, The Oil and Gas Journal, Tulsa, Okla.

Equipment Wanted

WILL PAY CASH

Storage tanks, abandoned pipe lines or wells, gasoline plants, refineries or any material accumulating from the oil fields regardless of location. WILL HANDLE UNLIMITED DEALS.

PLANT and EQUIPMENT PURCHASING CORP.
606 Fountain Sq. Bldg., Cincinnati, Ohio

Equipment Wanted

WANTED
Large Steel Storage Tanks and Structural Steel Buildings.
GREENSPON'S
National Stock Yards
(St. Clair County), Ill.

OPERATOR wishes to purchase for cash 3 or 4 used Cummins Diesel L1-600 Drilling Engines with chain transmission, slush pump and hoisting equipment of size of Wilson Mogul or Titan drawworks. Please communicate all particular including prices to P.O. Box 5051, Metropolitan Station, Los Angeles, Calif.

WANTED
2—35,000-55,000 bbl. storage tanks.
2—1300' air compressors.
20—25 ton locomotive cranes.
R. C. STANHOPE, INC.
60 E. 42nd St., New York, N. Y

WANTED—BULK PETROLEUM STORAGE, 10,000 BBLS. TANKS OR LARGER. Box B-120, The Oil and Gas Journal, Tulsa, Oklahoma.

For Sale—Equipment

FOR SALE at Wewoka: 1-10 ton Athey Trusswheel wagon, Model 843, Serial J616. $150. Patridge, Cities Service Oil Co., Bartlesville, Okla.

50,000 FT. 2" Line Pipe. Screw & P. E. Also 3", 4", 6", 8" and other sizes. Large stock of fittings, valves & other material. GILBERT PIPE & SUPPLY. Electra, Tex.

FOR SALE—One 96 foot rotary drilling derrick now standing near Seminole, Oklahoma. Good condition. price $600.00. Inquire Eason Oil Co., Enid, Okla.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump, Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City six #1 Smith 4' 6" x 16' Standard Oil and Gas Separators. Patridge, Cities Service Oil Co., Bartlesville, Oklahoma.

FOR SALE
35 H.P. Superior Gas Engine and 16 foot Band Wheel Power. Condition A-1. The Geo. McGinley Supply Co., Bowling Green, Kentucky.

FOR SALE 38 x 7, 40 x 8, and 10.50 x 24 used tires and tubes. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio.

FOR SALE
1—300 h.p. filler improved gas engine, 4 cylinder, horizontal type, 4 cycle, 17½" bore, 24" stroke, 185 rpm.
1—85 h.p. Bessemer gas engine, 2 cylinder, horizontal type, 180 rpm.
Located at Iola, Kansas, and offered for immediate shipment. The William W. Newell Company, Box 477, Nashville, Tennessee.

FOR SALE: 2—75 H.P. Fairbanks-Morse Type Y Oil Engines. Patridge, Cities Service Oil Co., Bartlesville, Okla.

40,000 Feet 1-inch used galvanized pipe, reconditioned. Price 8c per foot f.o.b. Shreveport, La. American Pipe & Supply Co., 2335 Texas Ave., Shreveport, La.

ROTARY PUMPS
One Viking ET-4 rebuilt direct connected to 2¾ to 1 gear reducer. 150-200 gpm, 100 pounds.

One 4" Worthington high pressure type GR. 120 to 200 gpm. 300 pounds maximum pressure.

New pump performance guaranteed.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. Whitespace computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

PRESSURE VESSELS—PUMPS—BUBBLE TOWERS—TANKS VALVES and FITTINGS—HEAT EXCHANGERS—COMPRESSORS

Fully Reconditioned Refinery Equipment All Kinds

Send Us Your Inquiries—No Priorities Required

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

ALL OR ANY PART—COMPLETE 2000 BARREL REFINERY

Bubble Tower 5'x52'x3⅜" — 21 Trays With Caps Chrome Alloy — 2000 bbl. Pipe Still, 2½" ID x 2 15/16" OD x 20' Tubes Alloy Headers — 8 Heat Exchangers, 255 sq. ft. ea. All New Tubes — Complete Copper Sweetening Unit — New Carload Ethyl Plant — 47 Storage Tanks from 500 to 15000 bbl. cap. — 30 Pumps All Types — Valves — Fittings — Pipe

THE PLAINS OIL & REFINING CORPORATION
GREAT BEND, KANSAS

OIL TRANSPORTS

4 — Diamond T tractors, 10 wheels, good tires. Capacity 77 bbls. each.

SONKEN-GALAMBA SUPPLY CO.
TULSA, OKLAHOMA

FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE — 24,000' of ⅝" and 3000' of ¾" Pump Rods. One 87' MIW 157,000 lb. Derrick. One TC20B Oil Well Pump Unit, and misc. pumping equipment. All in first class condition. Dirks Brothers, Tuleta, Bee County, Texas.

WE carry a full stock of drilling & fishing tools, stems, bits, spiders, elevators, anything for drilling. Degen Pipe & Supply Co. 401 N. Boston, Tulsa, Okla.

FOR SALE: Oil Hill, Kansas 3 Sullivan improved N Hydraulics only $100.00 ea. 6—3" x 4" GD chain driven power pumps. $50.00 ea. 4—2" Viking Pumps $10.00 ea. 1—CN Sullivan Drill, $250.00. 1—Sullivan 20 drill only $250.00. 5—GD Power Pumps robbed, $50.00 ea. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

7' x 30' STEEL RIVETED Horizontal Storage Tanks. Also towers, vessels, etc. GILBERT PIPE & SUPPLY, Electra, Tex.

TWO Star Drilling Machines located central Florida. One gasoline, on 6 pneumatic tires, capacity 1000', other steam, 2200'. Priced reasonably. Also oil and water well tools for all size holes. Box B-188, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: IMMEDIATE DELIVERY

2—30,000 bbl. steel storage tanks
2—20,000 bbl. steel storage tanks
5— 5,000 bbl. steel storage tanks
2— 2,500 bbl. steel storage tanks
3— 2,000 bbl. steel storage tanks
Conical roofs—riveted construction
Now knocked down, ready for loading.

J. C. MARTYNS
Gen. P. O. Box 297—New York City

ABSORBERS

2—72" x 30, 15 tray, 75# W.P.
1—72" x 30, 15 tray, 50# W.P.
All Southwestern Engineering Co. Make.

W. S. SMITH, 523 Thompson Bldg.
Tulsa, Okla. Phone 2-5473

FOR SALE: 250 Wico Magnetos type 8-1, in good condition. Degen Pipe & Supply Co., 401 N. Boston, Tulsa, Okla.

FOR SALE: 7¼ x 18 O. W. S. Mud hog slush pump, with 16 groove sheave, new liners and valves. Good condition. Located at Longview, Texas. Superior Oil Corp., Tulsa, Okla.

FOR SALE: 1 Askenia Type Magnetometer #7970, $750.00. Cities Service Oil Co., Bartlesville, Okla.—H. D. Patridge.

FOR SALE: Two 200 H.P. Electric Motors complete with grids and controls. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE

COMPRESSORS

Complete Repressuring or Air Lift Plant for Immediate Delivery.

2—13 & 5½ x 12 Ingersoll-Rand XOB compressors 400# pressure V-belt driven by 120 H.P. Chicago Pneumatic 3-cylinder vertical gas engines.

2—12 & 7 x 10 Chicago Pneumatic 400# pressure vertical compressors direct connected to 120 H.P. 3-cylinder Chicago Pneumatic vertical gas engines complete.

Used very little — excellent condition. Located on original foundation in Louisiana.

EARL E. KNOX COMPANY
Erie, Penna.

FOR SALE: 14" Groove V Belt Pulley.
525 Waggoner Building
Wichita Falls, Texas.

FOR SALE: Complete drilling outfit, #3 National Machine with engine, winch truck and four wheel trailer, water tanks, drilling lines, tools 18" to 6", 3,000' 7" casing all in excellent condition. Address inquiries to Box B-185, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
55000 bbl. Steel Tank
5000 bbl. Steel Tank
Tidewater Equipment & Mac'y. Corp.
305 Madison Ave., New York, N. Y.

FOR SALE: A complete Rotary Drilling Rig Cardwell. R. L. Drawworks—7¼ x 12 Gardner-Denver Pump. Equipment in excellent shape and now operating in Illinois. Write Box B-181, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Four 125-HP, 250# working pressure boilers, Oilfield type; also one 7" R. B. Union Tool unitized draw works, good condition, almost same as new. Inquire. T. T. Eason & Company, Enid, Okla.

FOR SALE

1—5½ Keystone-Joplin Special, Waukeshaw motor, A #1 shape with string of tools including light plant. Answer Box B-174, The Oil and Gas Journal, Tulsa, Okla.

DIESEL—GAS—ENGINES

Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.

Complete information on request.

A. G. SCHOONMAKER COMPANY
48 Church Street, New York, N. Y.

FOR SALE

OIL STORAGE TANKS

IN GOOD CONDITION

2—80,000 Bbl.
1—35,000 Bbl.
1—5,000 Bbl.
1—4,400 Bbl.
3—2,500 Bbl.
1—3,000 Bbl.
1— 600 Bbl.
1— 100 Bbl.
2—1,200 Bbl. Agitators (prac. new)

Address Your Inquiries to

Dulien Steel Prod., Inc.
2280 Woolworth Bldg.
NEW YORK CITY, N. Y.
TELE. CORT. 7-4676

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: Wilson-Mogul Drawworks with water cooled brakes and 100 H.P. International Motor. Melton Supply Co., Seminole, Okla.

Steel VALVES!

Cast and Forged Cast Iron Valves

Standard and High Pressure

Every Type Used in an Oil Refinery

All Expertly Reconditioned and GUARANTEED to Perform Like New.

No Delays

Immediate Delivery

YOU SAVE 25%

Over Cost of New Valves

For 8 years, a division of our plant has specialized in reconditioning valves for major oil companies and large industrial plants. Our shops are equipped with the most modern and efficient tools and facilities for rebuilding valves. Every valve has been expertly reground, reseated, repacked and hydrostatically tested. GUARANTEED to give same service as new valves.

DON'T DELAY. Order your valve requirements NOW and save 25% and more! We can also make immediate shipment of reconditioned flanges—ells—tees—and other fittings at savings of from 25% to 40%. Order TODAY.

Brown-Strauss Corporation
1446 Guinotte . . . Kansas City, Mo.

BUY AND SELL

Used Engines, Compressors, Power Plants and Gasoline Plant Equipment.

We Rebuild and Guarantee

L. F. SMITH CO.
217 W. Archer, Tulsa, Okla.

FOR SALE: F. O. B. Oklahoma Shipping point, 35,000 feet 6⅝" O. D. plain end, double length line pipe.

CENTRAL SUPPLY CO.
109 No. Elgin Phone 3-7552 Tulsa, Okla.

3" x 4" F&M Power Pump in excellent condition. Also Centrifugal & Steam Pumps. Gilbert Pipe & Supply, Electra, Tex.

3—150-HP 150# Working Pressure horizontal Return Tubular Boilers with breeching, in good condition; also unusually good stock of three, four and six inch valves and fittings for refinery and pipe line service. Call or write Eason Oil Co., Enid, Okla.

FOR SALE — OIL STORAGE TANKS
6—31,000 bbl. with breather roofs.
3—31,000 bbl. without roofs.
In first class condition — ready for immediate delivery.
1—Parkersburg SC-11 Pumping Unit, Stroke 5' to 11'.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards (St. Clair County), Illinois.

FOR SALE: 1—100 HP Fairbanks-Morse Diesel Drilling Engine in good condition. Box B-192, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE near Andrews, Texas: 10,000 bbl. bolted steel tank. J. W. Tripplehorn, Fort Worth, Texas.

FOR SALE: One complete Thrift Hydraulic Pipe Pulling Outfit. Cheap. F. O. Wilkins, 201 Commerce Building, Mt. Pleasant, Michigan.

FOR SALE: 2 Heinie water tube boilers in first class condition, complete with all connections, 30-ft. steel breeching and 80-ft. riveted stack. East Texas Pipe & S. Co., Kilgore, Texas.

20" x 12" ING. Rand Vacuum Pump. Also Compressors, Gas Engines, Bessemer parts. Gilbert Pipe & Supply, Electra, Tex.

WE HAVE in stock for immediate shipment:

15 HP., Fairbanks-Morse Oil Engine.
25 HP., Tips Oil Engines.
40 HP., Tips Convertible Engines
40 HP., Tips Gas Engines
50 HP., Tips, 2 cyl., Oil Engine.
120 HP., Tips, 3 cyl., Oil Engine.

TIPS ENGINE WORKS
Austin, Texas.

LINE PUMPS

Two—2½" 4 stage Byron Jackson multiplex with 150 h.p. motors and controls.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

Reconditioned, Tested and Guaranteed

Gate Valves for sale. Large stock, sizes 16" to 2", flanged end and screw end, various pressures.

Stock List and Prices on Request.

THE GATE VALVE SHOP
120 Tuke Box 1936
Pampa, Texas

COMPRESSOR CYLINDERS

2—18 x 20 Type S Clark
1—17 x 20 Type S Clark
1—16 x 20 V.H. Bessemer
1—15 x 20 V.H. Bessemer
1—7½ x 20 — 750# W.P. Bessemer
1—8½ x 20 Worthington
1—15 x 20 Worthington
3—16 x 20 Ingersoll-Rand

All above reconditioned and ready for work.

W. S. SMITH, 523 Thompson Bldg.
Tulsa, Okla. Phone 2-5473

Journalisms:

EVERY week, Journal editors in different parts of the country report into the home office fresh evidences of how the oil in-

dustry is helping in the war effort. This week, our attention was called to an unusual instance. Paul Truesdell, advertising manager of Universal Oil Products Co., Chicago, is doubling in bonds, so to speak. Early in the spring, Sears, Roebuck & Co. donated a corner of their display window, at State and Van Buren streets, Chicago, to the U. S. Treasury. They removed the glass, built a stage equipped with loud speakers, and installed ticket booths and windows for the sale of bonds and stamps.

The Treasury Department representatives invited the Advertising Managers Club, of which Mr. Truesdell is a member, to take over the running of noon-day shows at this corner, every week day, from 12:00 to 1:30 p.m. The club took it over early in May, and by the end of the month had sold more than $35,000 worth of bonds and stamps. A dozen members of the club, mostly industrial advertising men, take turns putting on the show, and sales are averaging right along $1,100 to $1,200 a day. The actual selling of the bonds and stamps is handled by the members of the Women's Defense Corps of America, 70 of whom work in shifts in the window each week.

The corner has become a very important institution. Topflight stars of radio, screen and stage are glad to appear there, and do nearly every day. Among others, Marlene Dietrich, George Jessel and his show girls, Buddie Ebsen and Skeets Gallagher of "Good Night Ladies," Effie Afton and many others have donated their talents. The Treasury officials report that there is no place in the country which is making a similar record of sales day after day. Paul is pictured here doing his stint.

•

TIME was when oil men prided themselves on getting around the country, but when compared with the armed forces, oil men are mere stick-in-the-muds. James E. Halferty, author of several articles in the Journal on gas lift in recent months, writes from Staten Island, whereas his latest previous address was Los Angeles. Mr. Halferty is a lieutenant junior grade in the Naval Reserve. He hasn't lost his touch with the oil business, as his last paragraph wishes "best of luck to all the oil men who have the increasingly difficult job of producing oil with less and less equipment."

•

OIL provides nearly a million Texans with their livelihood. Authority for this statement is the Texas Mid-Continent Oil and Gas Association, which reports that employes of the industry number 240,223. Multiplying this figure by four, the average to a family, gives a Texas petroleum army of 960,892 men, women and children—nearly a sixth of the state's population—directly supported by oil and gas operations. That's quite a sizable chunk of a sizable state's population to be dependent upon a single industry for its bread and butter—and cake.

ADVERTISERS IN THIS ISSUE

Air Reduction Sales Co.	1
American Cable Division of American Chain & Cable Co., Inc.	46
American Industries Salvage Committee	6-7
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CALENDAR

August

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, North Louisiana group, Shreveport, La., August 14.

September

NATIONAL PETROLEUM ASSOCIATION, annual meeting, Hotel Traymore, Atlantic City, N. J., September 16-18.

October

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, regional meeting, St. Louis, Mo., October 2.

NATIONAL SAFETY CONGRESS and EXPOSITION, Stevens Hotel, Chicago, October 5-9.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-third annual meeting, Dallas, Tex., October 8-10.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, fall meeting, Hotel Severin, Indianapolis, Ind., October 14-15.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Hotel Ambassador, Los Angeles, Calif., October 14-16.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Wichita, Kans., October 19.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, thirteenth annual convention, Wichita, Kans., October 20-22.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

November

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, Los Angeles, Calif., November 5-6.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

AMERICAN PETROLEUM INSTITUTE, twenty third annual meeting, Stevens Hotel, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Stevens Hotel, Chicago, Ill., November 17-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

December

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

1943

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.

April

AMERICAN PETROLEUM INSTITUTE, Division of Production, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 8-9, 1943.